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# USSR Report

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BIOMEDICAL AND BEHAVIORAL SCIENCES

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AEROSPACE MEDICINE

BE HEALTHY, PILOT

Leningrad LENINGRADSKAYA PRAVDA in Russian 24 Nov 84 p 4

[Article by A. Potapenko]

[Text] A reader is interested.

"One often hears of the existence of tools which control the state of health of pilots. If these tools are necessary, what is exceptional about them? Could the newspaper answer these questions?" V. Frolov

A complex program of ergonomic studies called "Pilot," mentioned in the above letter, was developed by the Leningrad Experimental Construction Bureau for Biological and Medical Cybernetics under the direction of Laurat: of the Lenin Prize, doctor of technical sciences V.M. Akhutin. Our correspondent requested more details about these studies from the acting scientific director of the program, candidate of technical sciences Aleksandr Yakovlevich Rats.

The speed of technological development of modern aviation indeed is "supersonic." The great altitude of flights, the increase in their duration and distance, the saturation with apparatus--all this requires of the flight staff, high professional and psychophysiological standards. Actually, one can ad infinitum make more complex the signalling apparatus in the cabin. But how does one insure that all this avalanche of information does not play a malicious joke on the pilot? How does one recognize whether or not the person is able to master such a colossal load? A complex program of ergonomic studies is directed at the solution to these problems.

Ergonomics is a relatively young science. It studies the activity of man in conditions of modern production with the goal of optimization of equipment, environment and conditions of labor. Arising in the common areas of two fields of knowledge--medicine and technology--ergonomics is the foundation for our studies.

The main task of the program is to aid doctors in detection of the state of health of pilots from the moment of their resolution to become pilots up to the day of their retirement from aviation.

In practice, ergonomics represents a system composed of six biotechnological

In practice, ergonomics represents a system composed of six biotechnological complexes, each of which fulfills a special function. Even a simple enumeration of them provides a clear representation of the elements of this system. The first complex carries out professional selection of candidates for each flight specialty, that is to say, it includes the future pilot in this system. The other mechanisms evaluate the experiences of aviators in the process of training in a flight simulator, conduct preflight control of equipment, and monitor the state of the pilots in flight. There is still one other biocomplex. Its basic object of concern is not the person, but the technology. It is directed at improvement of the management system, signalling methods and the mapping system.

The program entitled "Pilot" encompasses practically the entire sphere of professional activity of the flight-control staff. With the aid of electronic computers, all necessary information about each flight is maintained in the system, which helps to evaluate, at the necessary time, his functional state taking into consideration the characteristics of the organism.

The complex for preflight control "Pilot-1" provides, for a length of five minutes, accurate information about arterial blood pressure of the pilot, his body temperature, takes electrocardiographic readings, verifies tracking reactions and operative memory. Given this, the person can not even fasten the buttons on his jacket without being monitored. The index fingers of the left and right hand are adequately attached to special spaces and thus, the doctor records the necessary information by depressing several buttons. Four people can be monitored simultaneously. Such an inspection monitors more quickly, more deeply and more effectively the state of the pilot's organism before flight than conventional medical examination.

It is necessary to also mention the equipment which controls the vehicle in flight. Until now, the state of the organism in air was evaluated by the operator himself. Let us say, that feeling fatigued, the commander of the ship gives up the steering wheel to an assistant for a time, and during that time he is not in the appropriate work posture. And let us assume that he is not overcautious, and that simple self-monitoring would be transferred to the machine. Even when the operator does not suspect the weakening of his attention, or his fatigue, the transmitters would accurately determine the state of his psyche.

The complex program "Pilot" has already run initial experiments in the "Pulkovo" airport, under the auspices of the Academy of Civilian Aviation. They showed the high reliability of the system, and its effectiveness. The economy from the introduction of the program into wide-spread practice amounts to approximately one million rubles. It is significant that with its application, it becomes possible not only for pilots to be better prepared to work, but also it is possible to design an "aerial court" to consider human potentials.

It is necessary to note that "Pilot" is unique. It has no equivalent in native or foreign instrument making projects.

The program is universal. A simple change of certain parameters allows its use, for example, in merchant marine and in automobile transport. In general, it can be applied everywhere, where increased preparedness for experimental situations are required of a person.

## BIOTECHNOLOGY

### BIOTECHNOLOGY IN INDUSTRIAL PRODUCTION

Moscow TRUD in Russian 30 Aug 84 p 3

[Article by L. Klyukin: "Microbe-Creators"]

[Excerpts] By means of biotechnology we produce tens of tons of vitamin B<sub>2</sub> annually--an important and irreplaceable additive to animal feed. Simply obtaining the substance by such means is a serious victory. Because right now in most countries it is produced by a complicated and expensive chemical method that includes 14 technological stages. But we need three times more of this product for the complete satisfaction of fodder requirements. What is to be done? We could, of course, invest tremendous means and build new B<sub>2</sub> plants. However, Soviet genetic scientists have been able to obtain a new strain that produces four-six times more B<sub>2</sub> than the old one. And this means that at the present capabilities it is possible to increase the output of this valuable product by that many times. The new strain has been put into production.

Today our microbiological industry puts out 150 types of products that are essential to the national economy. Its pride is the fodder protein that is produced in the quantity of more than 1 million tons per year and an irreplaceable fodder additive, the amino acid lysine, produced in the quantity of 11,000 tons per year. The concentration of the borrowed substance in microbiologically synthesized products is such that a ton of this protein saves 5-7 tons of cultivated grain and a ton of lysine permits the effective use of 125 tons of fodder grain. It is clear what kind of significance these additives have for our country, where 70 percent of the arable land is in a risky agricultural zone. And biotechnological production does not depend on the weather and can provide its entire range of products at any place on the planet.

Domestic biotechnology is also coping successfully with the development of bacterial means of protecting plants. Such means are good in that they are specific in their effect. For example, the bitoxibacillin preparation produced with the aid of microbes. It kills the Colorado beetle outright, but does not touch anything else--not birds, not animals, not fish, not bees, not man. Clearly, not a single chemical preparation can compare with such "weapons".

Biotechnology will make a significant contribution in the near future, once it has established industrial production of a special protein that is generated in the bodies of man and animals when they are defending themselves from attack by

viruses. This protein is interferon, which not only takes care of viruses, but also supresses the growth of cancer cells and reinforces the medicinal action of antibiotics. Strains of bacteria that produce human interferon have been obtained and launched into production.

Academician A. P. Aleksandrov, president of the USSR Academy of Sciences, appearing at the 26th party congress, evaluated the significance of biotechnology thus:

"This field will begin to play an especially important role in the near future..."

12461

CSO: 1840/143



BIOTECHNOLOGY

NEW EQUIPMENT FOR CELL CULTURE

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 30 Aug 84 p 3

[Article by A. Narimanov: "What Is Growing in the Flask?"]

[Text] The elderly gray-haired man studied the instruments in operation long and carefully. He walked from one apparatus to another and scrupulously compared the technical characteristics cited in the plans with the prepared results of analyses given out by the registering equipment. Then he said, "Now I understand why my instruments perform poorly in the USSR. I didn't know you had such remarkable and precise equipment."

This was Dr. D. Lord, head of the world famous English firm Data Loop LTD, which specializes in measuring technology. The specialist-businessman's compliment was addressed to an experimental-engineering development of the AN SSSR [USSR Academy of Sciences] Scientific Center for Biological Research (Pushchino), which was demonstrated this spring at the international exhibit and market in Leipzig. The exposition of the Pushchino academic institutes, which consisted of instruments and facilities for biological research provoked a great deal of interest on the part of scientists and specialists from various countries. It was awarded the highest honor of the exhibit--four gold medals.

"Today biologists all over the world often prefer to work not with the whole organism, but with cells grown in test tubes," says the head of the laboratory, E. Lezhnev. "For example, experiments requiring the use of a hundred rats can be carried out on a single culture, and it gives a more reliable result."

In addition, present-day biology lays the foundations for practical innovations not only in medicine, but in various areas of industry and agriculture. And here "flask" culture can make its contribution. After all, from one plant cell one can obtain a mature plant--a fruit tree, berry bushes, potatoes, and many vegetables. Such production is several times more profitable than cultivation by traditional methods. And besides, it improves the agricultural quality of plants grown in test tubes according to special technology. Pests cannot get to them, nor does disease harm them.

Another possibility opening up to selectionists is that of establishing those cultures that are impossible or very difficult to grow on plantations, for example, the famous ginseng. Besides this, under artificial conditions researchers strive for intensive cell-division and obtain large masses of substances that contain components valuable to man: enzymes, hormonal substances, and vitamins. In other words, plant and animal cells, just like microorganisms, are nature's



ladders. It is necessary only to find the key to this source of valuable raw materials and to make the deep course of the life of microscopic creatures proceed at the discretion of man. But to solve these problems, experimentors need the most precise hardware components...

About 10 years ago Dr. of technical sciences E. Lezhnev proposed including the subject "developing apparatus for the controlled culture of animal and human cells" in the plan of the AN SSSR Institute of Biophysics. This was a bold step; an animal cell is always an uncertain culture. Isolated from the organism it does not willingly reconcile itself to the new environment. There are also those cells that do not tolerate an alien environment. Even in vessels of a few milliliters it is difficult to put them on the peaceful track of co-existence, but here, you see, they are proposing the culture of liter volumes and the finding of levers by means of which their vital activity can be activated.

"Such automated systems do not exist yet," said Lezhnev at the scientific council, "and the basic reason for that is the virtually complete absence of theoretical developments and the use of exclusively empirical approaches in this area of instrument engineering. And I propose..."

And he set forth his opinion on the principles of the new technology. The project was approved. Three people undertook to carry it out: E. Lezhnev himself, and his scientific associates V. Pankratov and Y. Koshevoy.

As the researchers recall, things did not go well for them at first. "Every year when the annual scientific account was presented we worried; would it work? Would it be recommended? After all, I didn't have a single publication to my name," relates V. Pankratov. "And the cells, as if by intent, were 'obstinate', they didn't grow--and everyone here..."

And the public address system broadcast through the corridors of the institute: "We heard Lezhnev's cells 'croaked' again. They ought to be building airplanes, but no, they took up biotechnology," they hinted at the aviation background and former work of the project director.

Lezhnev's people were not bothered by the debates in the gallery, or rather, they paid them no attention at all, and cutting themselves off from the rest they disappeared in the laboratory until late in the evening.

In the third or fourth year hope appeared; it seemed as though they had discovered the thread. The ball began to unwind--it was as if the cells had agreed on cooperation. But here the instruments went on strike. The system refused to hold to a stationary regime; the hydrogen ion gauge "danced", the temperature in the fermentor-cultivator first jumped, then fell, and the cells suffocated from a lack of oxygen.

Almost six months was spent trying to find the reason for the malfunctions. The design had to be redone from the start and the assemblies and units installed according to the new system. Having learned, albeit incompletely, for nature's secrets are incalculable, the reasons for the cells' failure to grow under artificial conditions, E. Lezhnev, V. Pankratov, and Y. Koshevoy introduced to

the new division of science their theoretical back-log. First the laboratory proposed a number of principles for the design of apparatus for the controlled culture of animal cells. The results of this work were realized in lot samples. Thus appeared the first domestic set of apparatus, which was called Tsellotron.

...In a glass reactor enclosed inside a vertical chamber a brown fluid rhythmically "breathes". These are cells. At their "request" a mixture of gases and nutritive substances comes into the reactor along pipe-canals that are united with a life-support system. Over the course of the entire 30-day experiment the life-support system remains sterile and in the reactor strictly stipulated pressure, temperature, concentration of dissolved substances, the speed with which they are supplied, and numerous other parameters are maintained.

The actuating equipment of the complex has completely taken over the conduct of the experiment. For example, in order to specify the number of "vital" cells the help of a laboratory assistant is not at all necessary--an analyser replaces him. It periodically takes samples from the culture and puts them in the field of a microscope. And images of the sectors being studied immediately spring up on two television screens. In less than 15 seconds the instrument's "eye" examines 1000 cells. The results of the analyses light up on a number panel, come out on a tape punch, and then the information goes into the computer memory. According to the desire of the researchers, the computer processes the experimental observations, extracting barely noticeable quantitative and qualitative patterns from the huge informational mass.

Several more favorable methods of growing separate organs and tissues have already been mastered on Tsellotron, as well as "generating" the technology for producing vaccines and sera. Now Tsellotron is being tried as a "pancreas" apparatus. The road is being paved toward solving the problem of an "artificial liver"...

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MEDICINE

UDC 617.7:658.386.3

EDUCATION, TRAINING OF OPHTHALMOLOGIST PERSONNEL

Moscow VESTNIK OFTAL'MOLOGII in Russian No 5, Sep-Oct 84 (manuscript received 20 Mar 84) pp 3-7

[Article by Professors N. B. Shul'pina, Z. A. Aliyeva and V. V. Shmeleva, Ophthalmology Department (Chief--Professor N. V. Shul'pina), TsOLIUUV [Central Order of Lenin Institute for Advanced Training of Physicians] and Department of Eye Diseases (Chief--Professor A. A. Aliyeva), Azerbaijan Institute for Advanced Training of Physicians im. A. Aliyeva; submitted 20 Mar 84]

[Text] Soviet public health has achieved outstanding successes and by many indicators holds a leading position in the world at the present time. This is the result of the constant concern of the party and government about the well-being and health of the Soviet people. The decisions of the 16th CPSU Congress and the following CPSU Central Committee Plenums have determined the basic directions of public health development in our country at the present stage with the raising of basic questions of radical improvement in the medical services to the population. A large role is allotted to the quality of training of specialized medical personnel, including ophthalmologist personnel. In recent years, substantial changes have taken place in this important problem. The planned, available to all, free system for the advanced training of physicians that has existed in our country for more than 50 years is a great achievement of Soviet public health. At present, this training is recognized as a kind of standard for postgraduate training of physicians for a number of other countries. There are 16 institutes and 38 faculties for the advanced training of physicians in the Soviet Union. The role of scientific-method center in this system belongs to TsOLIUUV [Central Order of Lenin Institute for Advanced Training of Physicians]. The Ophthalmology Department of this institute supervises the training of ophthalmologist personnel, whose number at this time is 20,000. The department collective, using the rich experience of work on the education and training of ophthalmologists, is actively participating in working out the national problem "Scientific Foundations of Advanced Training of Physicians". The profile scientific research institutes and the eye disease departments of medical institutes and large practicing public health institutions play a large role in the postgraduate training of personnel as well.

TsOLIUV has studied the need in postgraduate education (in the RSFSR) in the different specialties. On the basis of these data, differentiated standards for the five-year planned postgraduate education of specialist physicians have been developed. The need for the following types of education was found applicable to ophthalmology: in specialization--12.4 (number of trainees for 100 physicians), in general advanced training--11.3, and subject advanced training--45.0. The results of such an analysis indicate that the postgraduate education of physicians should be planned. The number of trainees for 100 ophthalmologists should be 9.0 (V. A. Zhukov, 1982) according to the differentiated standards for five-year planning of postgraduate advanced training. The fact that for 100 ophthalmological physicians there are 10.8, who have just completed an institute, and 6.3 physicians, who are of retirement age, that is 17.1, who are not in need of advanced training is taken into consideration in planning [1, 2].

At present, all postgraduate advanced training of eye physicians is conducted according to a single system corresponding to a unified program, worked out by the collective of the Ophthalmology Department and Curriculum-Methods Section of TsOLIUV with the participation of representatives of the USSR Ministry of Health and the professor-instructor staff of the State Institute for the Advanced Training of Physicians and medical institutes, as well as eye scientific research institutes. The program is formulated to apply to professional position requirements, as developed by colleagues of the departments for the different categories of ophthalmology, and is approved by the Main Administration of Educational Institutions of the USSR Ministry of Health. The postgraduate training of ophthalmologists includes internship, clinical staff physician work, specialty training periods, general and subject advanced training, information courses, probation status, ten-day special programs, seminars and symposiums. As before, a year's internship is the earliest training of an eye physician, called to satisfy the growing needs in ophthalmological care. Physicians enter internship immediately after completing a medical institute. They go through training at the clinical facilities of eye disease departments of medical institutes, in specialized eye clinics, as well as in large eye departments of multiprofile hospitals. The internship covers mastery by the physician of the basic methods of examining a patient, selection of glasses, and basic types of therapeutic and surgical care. The physician takes an examination for specialist when he completes his internship, and then starts working.

The purpose of specialization is for a physician to acquire complete, systematized, theoretical knowledge and a minimum of professional skills, needed for independent work as an ophthalmologist. The training periods lasting 5 months are for physicians, who have completed the medical department studies of a medical institution and who have worked at least 3 years in "Therapy" or



or "Surgery" specialties. The indicated way of forming ophthalmologist personnel from physicians of other profiles is quite widespread because ophthalmology internships do not satisfy the existing demand. The number of physicians who come into ophthalmology from other specialties is 37.2 (for 100 physicians) in the RSFSR. The purpose of the general advanced training of physicians is mastery of the selected problems of theoretical knowledge and the practical skills of basic specialty departments depending on the position a physician holds and his length of service. Duration of the training periods (from 1.5 to 4 months) depends on this. General advanced training is for physicians who have not taken basic specialization and have worked as ophthalmologists for at least 5 years regardless of position they hold, as well as for physicians who have taken specialization and have worked as an ophthalmologist for at least 3 years. The frequency of this type of training is determined by a time limit of 5 years.

The actively developing form of training of ophthalmologist personnel is the subject advanced training that provides physicians with the opportunity to acquire a deeper theoretical knowledge and practical skills in a specific specialty department in accordance with the nature of the work and position held. The duration of these training periods is 1, 1.5 and 2 months depending on the subject and number of trainees. These training periods are for specialists who have worked in the ophthalmology field for at least 5 years and have taken their last advanced training at least 3 years ago. The general and subject advanced training periods, the same as specializations, are conducted only in institutes and departments for the advanced training of physicians; proper certification is given to the trainee with completion of a training period. At present, a listing has been made of the postgraduate training periods for ophthalmology that indicates the subjects of the training periods, type and duration of training, and number of physicians that may be enrolled. This information is reflected in a unified program; a list of the training periods, conducted by departments and postgraduate advanced training system courses for physicians, is presented below. General advanced training (OU) includes: ophthalmology for physician-surgeons and therapists; selected problems of ophthalmology for staff ophthalmologists of polyclinics and branches. Subject advanced training includes: important problems of ophthalmology and organization of ophthalmological care for chief ophthalmological specialists of republics, krais, oblasts and for chief physicians of ophthalmological hospitals and dispensaries, and chiefs of eye departments; selected modern methods of diagnostics and therapy of eye diseases for ophthalmologists of polyclinics and eye departments; glaucoma--for chiefs and staff physicians of ophthalmological departments of republic, kray, oblast and municipal hospitals, medical and sanitation sections of large industrial enterprises and emergency care centers; neuroophthalmology--for ophthalmologists of eye departments of hospitals and polyclinics as well as for ophthalmologists



who consult in somatic departments; eye prosthetics--for chiefs of ophthalmological offices in hospital departments and clinics, and for chiefs of eye prosthetics offices; vascular pathology of the vision organ--for ophthalmologists of republic, oblast, kray and municipal hospitals and polyclinics; ophthalmoendocrinology--for chiefs and staff physicians of eye departments and polyclinics and for ophthalmologists who consult in somatic departments; and contact [lens] correction of vision--for ophthalmologists and separately for optical engineers. In 1983, in accordance with the order of the USSR Ministry of Health, the Ophthalmology Department of TsOLIUUV introduced a new series of subject advanced training courses --on ophthalmooncology for physicians of polyclinics and hospitals, conducted by the All-Union Ophthalmological Center at the facility of the Moscow Scientific Research Institute of Eye Diseases im. Helmholtz, and a series for physicians, and separately for opticians, on spheroprismatic correction of vision, which is conducted by the Laboratory of Optico-Physiological Methods of Vision Restoration and Correction. In addition to the indicated types of training for ophthalmologists, there are courses of information and probation status courses. The purpose of the information course is to acquire up-to-date knowledge in a specific department or separate specialty problem. In the probation courses the physicians acquire more thorough skills applicable to a narrow specific specialty area. Both types of training are conducted for 10-30 days at the facilities of scientific research institutes, large institutions of practical health care and in exceptional cases at medical institutes and GIDUV [State Institute for the Advanced Training of Physicians]. Physicians, regardless of the position they hold and length of service, may be enrolled in such courses.

New forms of postgraduate education have been introduced in recent years that include, specifically, a series of correspondence course-class advanced training periods. The pre-training period, which is a correspondence form of education, is very popular among ophthalmologists. This is a vital and useful system that allows a physician to study actively and increase his knowledge without taking leave from work or his family.

The curriculum plan of the pre-training period is formulated in such a way that the trainee systematically studies the recommended literature for 4-6 months (depending on the program). Generally, the pre-training period introduces an element of independent creative work on the part of the trainee and suggests that he conduct an analysis of his own clinical observations. Generally, subjects that are most important for a practicing physician are selected for such an analysis. The assigned reading and the generalization of results of one's own numerous observations forces a physician to think scientifically and to form new proposals that are discussed later on the rostrum during class studies.

One of the new types of advanced training in the form of extension courses with pre-training preparation is very popular. The departure of a professorial-instruction staff brigade of a department for a republic or oblast is a great event for the local specialists. In this way, the qualifications of 20 physicians of an oblast or republic may be raised at once. The scientific research of ophthalmologists is activated and highly qualified consultation and surgical care are provided to patients. The local public health bodies receive organizational-methodical recommendations that pertain to specialized ophthalmological service. During recent years the Ophthalmological Department of TsOLIUUV has conducted 26 one-month training periods in different oblasts and republics; this has enabled the expression of opinions on some organizational matters, specifically that a four-week training period is recognized as being the most expedient. The curriculum program should be formulated together with the chief ophthalmologist of the oblast or republic, where the training period is to be conducted, and should meet the needs of the local ophthalmological service. The quality of the training in the extension training periods depends largely on how well the study facility is equipped with modern apparatuses and instrumentation. We consider it is more promising to conduct extension advanced training with the use of the clinical facilities of medical institutes, scientific research institutes of eye diseases and specifically the departments of GIDUV and the faculties for advanced training of physicians; we have become convinced of this with the successful operation of training personnel at the facilities of the Azerbaijan, Armenian and Tashkent GIDUV. It should be noted that at present the instruction in all advanced training periods is conducted with the use of technical means, testing and programmed checking.

There is no doubt that the best form of preparation and training for ophthalmologist personnel is two-year service as a clinical staff physician. At present, staff physicians are trained according to a new program in which the number of clinical skills and types of surgical operations is determined. The individual plan of training for each staff physician includes studies on the organization of health care, topographic anatomy, study of clinical pharmacology, medical genetics, basics of deontology, and medical ethics. We attach great significance to preceptorship in forming a staff physician as a specialist and man of high moral qualities. Preceptorship in a broad sense includes not only training in a specialty, but educating a physician as a man, and educating him by personal example and life experience as well. Much attention is given to this problem, and it is discussed at council meetings and party meetings of faculties and the institute as a whole. The quality of graduate student training has improved significantly in recent years. The forming of future scientific workers or instructors of specialized medical schools should be based on good clinical preparation of secondary school graduates. For this reason, when we accept persons for graduate work, we prefer persons who

have successfully completed their work as staff physicians and who have proven themselves to be good specialists with high moral principles; this is extremely important for future educators of medical personnel. At present, a new variant of the minimum candidate program for ophthalmology, formulated according to the aims of VAK [High Degree Commission], has contributed to higher quality theoretical preparation of graduates.

In conclusion, it should be pointed out that free postgraduate education of ophthalmologists has not exhausted its potentialities and perspectives for further development. Intensification of subject advanced training is essential in dealing with problems of vascular pathology, sugar diabetes, glaucoma, myopia, and injuries of the vision organ--diseases that are the first cause of reduced vision and invalidism. The training of microsurgeons has to be activated, especially now as the average eye departments are equipped with microsurgical apparatuses, instruments and suture material as needed. Advancement of instructor personnel itself should be practiced more actively in dealing with specialty problems, as well as in the plan of improving pedagogical mastery by education at FPK [possibly, pedagogy courses] and medical pedagogy training periods and in optimization of the teaching process. New monographs and particularly the textbooks for eye physicians, which are being prepared for publication, will provide unquestionable support for the training of ophthalmologist personnel.

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MEDICINE

UDC 613.221:613.287.54]-07

EXPERIMENTAL EVALUATION OF BIOLOGICAL VALUE OF PROPIONIC-ACIDOPHILUS 'MALYUTKA' AND 'MALYSH' MIXTURES

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 84 (manuscript received 12 Sep 83) pp 70-72

[Article by S. I. Samigullina and V. P. Pavlyuk, Chair of Childrens's Diseases No 1 (Chief--Professor K. T. Nabukhotnyy) Chernovtsy Medical Institute; article received 13 Sep 83]

[Text] The problem of synthetic feeding of children in their first year of life is becoming increasingly more urgent with the higher frequency of hypo- and agalactica in mothers [1]. Now, a number of highly nutritious products have been produced for the feeding of young children. An extensive study is being conducted on further optimization of lactic mixture compositions and their enrichment with protective factors.

The colleagues of our Chair have developed a method of preparing propionic-acidophilus mixtures, "Malyutka" and "Malysh", and have studied their influence on physiological processes.

Dependence of the Indicators of Physical Development and Nonspecific Protective Factors on Type of Feeding of Animals ( $M \pm m$ )

Indicator	Animal group		
	1st	2nd	3rd
Total weight gain, %	116.3±6.3	189.9±5.0	225.5±8.4
Mean daily weight gain, %	6.8±0.4	10.4±0.6	13.2±0.3
*KEB	2.12±0.2	3.48±0.15	3.09±0.1
Thymus index	3.65±0.4	3.64±0.29	4.12±0.23
Blood serum lysozyme, mkg/ml	45.36±1.16	45.1±2.5	46.8±2.27
Hemoglobin, g/l	140	160	240
Number of leucocytes in 1 liter [sic]	(5.9±1.13)·10 <sup>9</sup>	(8.3±1.24)·10 <sup>9</sup>	(10.46±1.65)·10 <sup>9</sup>

\* Coefficient of protein efficiency



The products are prepared by introducing a combined all at once into a reduced pasteurized mixture, and souring the mixture in a thermostat for 16-18 hours with subsequent maturation of products in a refrigerator. The ferment consists of acidophilus bacteria and Schermanii propionic acid rods, which are cultured in a Vorob'yev serum-yeast broth, containing 0.5 mg% cobalt chloride.

The purpose of our work was to study the biological value of the propionic-acidophilus mixtures, "Malyutka" and "Malysh", and to investigate their influence on the physical development and some natural protective indicators in growing two week-old rats. The experiment was conducted under minimal stress conditions with the chemical composition consistency of the food properly maintained.

The biological value of the product was judged by the coefficient of protein efficiency (KEB), described by A. A. Pokrovskiy [3], the lysozyme level was determined by the Perry turbodimetric method as modified by Grant, the total protein level of the blood serum was investigated by a refractometric method, and the hemoglobin and leucocyte levels were determined by conventional methods.

The animals were divided into three groups depending on the type of feeding. The two week-old rats of the first group received a sweet "Malysh" mixture in addition to the regular ration, the second group received an acidophilus mixture, and the third group--the propionic-acidophilus "Malysh" mixture. The rats were maintained on these rations for three weeks. The investigation results are presented in the Table.

The coefficient of protein efficiency, which determines daily body weight gain in grams per 1 gram of consumed protein, was calculated according to formula

$$KEB = \frac{B - B_0}{i} = \frac{\Delta B}{i},$$

where  $B$ --animal weight at end of experiment (in grams);  $B_0$ --animal weight at start of experiment (in grams);  $\Delta B$ --weight gain (in grams);  $i$ --total amount of protein (in grams), consumed by an animal in a day.

The coefficient of protein efficiency in the second group was found to be higher than in the third group, and the highest weight gain was observed in the third group. Apparently, this may be explained by the fact that the anabolic effect of the product is related to the protein component as well as to the propionic-acidophilus mixture of micronutrients (enzymes, vitamins, cobalt and others) which are part of the composition.

The influence of the studied products on hemopoiesis deserves our attention. The hemoglobin level of the peripheral blood was highest in the experimental group animals, and the optimal number of leucocytes was found in the same group.



The metabolic balance state of a growing body may be judged by the magnitude of the thymus index (ratio of thymus weight in milligrams to body weight in grams). Numerous studies have established that the thymus is a multifunctional gland which participates in immunological and metabolic processes [4-6].

Analysis of the data, obtained for the different groups of animals, indicates minimal accidental changes of the thymus gland in rats who received the propionic-acidophilus mixture "Malysh". In our opinion, the positive influence of the studied products on the development and functional state of the thymus is dependent on the presence of cobalt and vitamin B<sub>12</sub> in them; these micronutrients activate the various enzymes of the system (phosphatases, arginases, cocarboxylases [B coenzyme] and others), contribute to the assimilation of calcium and phosphorus, and normalize hemopoiesis.

Our data concur with the study results of other authors [7] that indicate the need for providing a growing body with these microelements.

The literature data on the relationship of thymus size and its influence on the protective strength of the body are contradictory [8-12]. However, the optimal indicators for lysozyme, leucocytes and hemoglobin, and the highest mean daily weight gain with a large thymus gland provide a basis for speaking about the expressed influence of type of feeding on the adaptive potentialities of the body [13].

Thus, the data obtained experimentally, indicating maximum weight gain of animals in the basic group and high lysozyme and hemoglobin levels, allow us to state that the propionic-acidophilus "Malysh" mixture is a biologically valuable food product.

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## MEDICINE

### PRIZE NOMINATION FOR INTEGRATED CIRCUITS IN HEART MONITOR

Minsk SOVETSKAYA BELORUSSIYA in Russian 23 Nov 84 p 3

[Text] The rapid development of microelectronics has made it possible to develop and set up the mass production of many products for individual use, from quartz watches, microcalculators and electronic games all the way to personal computers. In many respects, all of this is due to progress in the technology of producing large integrated circuits with a metal--oxide--semiconductor (KMOP) structure. As a result, products with a unique combination of power-consumption, speed, noise-immunity and cost characteristics have been obtained. An important contribution to the solution of this problem was a work entitled "Establishment of Scientific Principles, Development of Technology and Organization of Highly Economical Production of Low-Threshold Large Integrated Circuits Based on KMOP Structures," which has been nominated for the Belorussian State Prize in the field of science and technology.

The new technology made possible the development of a number of large integrated circuits for both general technological and general medical applications. This opened up new possibilities for the designers of medical equipment. In particular, in the course of many years of cooperation between microelectronics specialists and scientists of the Belorussian Scientific Research Institute of Cardiology, a unique instrument was designed--an electronic wrist microcardiomonitor for the continuous analysis of heart rhythm and its disorders in free-moving subjects, both under inpatient and outpatient conditions. This instrument considerably enhances the quality of the diagnosis and treatment of heart arrhythmias. The series production and widespread use of the microcardiomonitor will contribute to a decrease in disability and other serious complications in many patients.

It has thus become possible to develop a number of specialized portable microcardiomonitoring systems for the solution of various problems of prolonged automatic analysis of heart functions.

FTD/SNAP  
CSO: 1840/168

MEDICINE

BELORUSSIAN BLOOD SUBSTITUTES EXHIBITED

Minsk SOVETSKAYA BELORUSSIYA in Russian 1 Dec 84 p 2

[Article by R. Chernyak]

[Text] Moscow--The Belorussian Academy of Sciences' Institute of Bioorganic Chemistry and the Belorussian Scientific Research Institute of Blood Transfusion are demonstrating their latest achievements at [the USSR Exhibition of National Economic Achievements]. The biochemists have developed a set of reagents for the radioimmunological determination of insulin in the blood. Researchers at the Scientific Research Institute of Blood Transfusion have developed preparations such as an erythrophosphatide for the treatment of patients with hemophilia and anemia, as well as blood substitutes for cases of great losses of blood or burn shock.

FTD/SNAP  
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## PHARMACOLOGY AND TOXICOLOGY

### ROLE OF SLEEP PEPTIDES IN STRESS

Moscow PRIRODA in Russian No 9, Sep 84 p 107

[Summary article in DOKLADY AN SSSR, 1984, Vol 274, No 2, pp 482-484, "Sleep Peptide Against Stress"]

[Text] Operation of the body's immune system deteriorates in response to emotional-painful stress accompanying cardiac, vascular and gastric disease; specifically, activity of the attack (killer) cells responsible for resistance of the body to tumor diseases (or antitumor resistance) is reduced.

It was shown that the GABA-ergic (i.e. affecting gamma-aminobutyric acid) system is activated in response to emotional-painful stress; its effect is primarily directed toward reducing adrenalin concentration in the adrenal glands and the heart. Thus, natural "inhibiting" limits the stress reaction of the body.\* One of the final metabolites of this inhibiting system, gamma-oxobutyric acid, can be used for the prevention of excessive stress injuries to the internal organs.

Could the organism's immune system also be protected by such a method? As shown by experiments done by a group of researchers from the USSR Academy of Medical Sciences General and Pathological Physiology Institute, the USSR Academy of Sciences Bioorganic Chemistry Institute imeni M.M. Shemyakin, and the USSR Academy of Medical Sciences Human Morphology Institute, it is possible to prevent the depression of killer cells under stress, not only through the administration of gamma-oxobutyric acid but also by using another inhibiting agent formed in the brain during sleep, the endogenous delta sleep peptide.

Experiments have been done on male mice; the animals were divided into three groups: control, a group undergoing stress where the animals were forced to remain immobile for 6 hours, and a group who were given an inhibiting agent (gamma-hydroxybutyric acid or delta sleep peptide) prior to stress. In order to determine activity of the killer cells, a culture of target tumor cells tagged with radioactive chromium was first prepared.

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\*Meyerson, F.Z., Malyshev, V.V., Popova, H.S. et al.: Byull. eksp. biol., i med., 1979, v. 88 No 12, p. 659.



Twenty-four hours following the stress, experimental animal splenocytes (spleen cells, half of which are made up of killer cells) were incubated for four hours with tumor cells; the liquid medium obtained after centrifuging and isolation of the cells was then studied. Killer cell activity was judged by the radioactivity of the medium, since target cells affected by the killer cells give off radioactive chromium in breaking down. The higher the radioactivity of the residue, the higher the killer cell activity.

Activity of the killer cells was 30-55% lower in animals undergoing stress than in the control group. If gamma-hydroxybutyric acid was given to the animals prior to immobilization, the immune cells' activity was reduced significantly less. Administration of natural delta sleep peptide to the animals prior to stress also protected their immune system very well; in this case activity of the killer cells was little different from the control.

High protective effect was further obtained with the use of the synthetic analog, cyclic delta sleep peptide; the organism's antitumor resistance system did not suffer at all after stress.

It is significant that full prevention of killer cell stress damage was attained when the dose of synthetic peptide was 6000 times less than the dose of gamma-hydroxybutyric acid necessary for obtaining the same effect.

12262

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PHYSIOLOGY

UDC 612.766.1:612.825.8+613.867

METHODS OF MONITORING MENTAL WORK EFFICIENCY, EMOTIONAL ACTIVITY

Moscow GIGIYENA I SANITARIYA. in Russian No 11, Nov 84 (manuscript received 11 Mar 84)  
pp 48-49

[Article by K. R. Stavitskiy and N. A. Gosudarev, Moscow; submitted  
11 Mar 84]

[Text] Fatigue is the objective need of the body for restoration. The pathogenic cause of fatigue is the continuation of work against a background of lowered work efficiency.

Therefore, monitoring the state of those body systems, which are first to signal lowered work efficiency, is essential for preventing the development of fatigue. The functional state of the central nervous system is known as such an early indicator of lowered work efficiency.

Another aspect of the problem is that the primary expression of lowered work efficiency on the part of the different central nervous system analyzers and higher nervous activity processes--visual and auditory analyzers and the mental processes of memory, attention, thinking and others--depends on the specific work load [4, 9]. In order that the monitoring methods of such states be universal, it is essential to have a potentiality for recording the indicators that reflect an integrated evaluation, not a special one, but an evaluation of the general neuro-mental work efficiency, that is, the work efficiency of the brain which is responsible for the formation and maintenance of any working functional system.

The method itself must meet the requirements, which have to be observed for widespread practical implementation: safety of the process and aftereffects of the measurement procedure for the examined persons, and speed of examination and processing of results.

A method, which satisfies these requirements, is a system of monitoring the mental work efficiency of a person with an apparatus for measuring the quasistationary potential (KP) of the brain cortex; this system was developed under the supervision of V. P. Nekrasov, doctor of medical sciences [7,8]. The quasistationary potential which is known by other names ("constant potential", "DS-potential",

"quasistable difference of potentials", "electroencephalogram constant component" and others), reflects the energy state of the neuroglial brain populations, whose electric activity (so-called slow electric processes--MEP) is related to the neurophysiological maintenance of the higher mental functions, as shown by a number of studies [1, 3, 5, 6].

The following has been established on the basis of conducted research [7]. The quasistationary potential is an integrated indicator of a whole number of human psychophysiological functions. The quasistationary potential reflects physical fatigue processes in addition to the mental state. The feasibility of converting the quasistationary potential into class indices (KI) of the mental work efficiency state is shown in Table 1.

Basic negative action on the general work efficiency of man is exerted by emotional stress factors.

Emotional activity monitoring of a working person enables us to judge, earlier than mental work efficiency monitoring, about the potentiality of fatigue development, since it gives information not on the state of potential work efficiency, corresponding to the moment of measuring the quasistationary potential, but on the state which may lead to lowered work efficiency in the near future.

Measurement of electrodermal resistance (EKS) is one of the most widespread and convenient methods of determining the emotional activity level.

We calculated the class indices that determine the emotional activity levels according to the recorded electrodermal resistance indicators [8]. In doing this, we used cylindrical metal electrodes (squeezed by both hands of the subject like ski poles) and V-shaped plate electrodes, placed in the center of the palm; this enabled us to expand more fully the potentialities of the EKS determination method.

These indicators and their class indices are only a part of the information for judging the threat of an impending fatigue state in a working person, since in a number of professions the activity is accompanied by a higher level of emotional activity (for example, the profession of surgeons). Another aspect of solving the problem is determining the correspondence of the measured excitation of the performed activity.

V. P. Nekrasov [7] discovered an important pattern when he compared the EKS indicators obtained from the cylindrical and plate electrodes. The coefficient of  $EKS_{plate} / EKS_{cylind}$  equals 2 in cases of adequate emotional stress activity. The stronger the destructive emotional stress activity was expressed (including observations of

life threatening situations), the greater was the difference between the coefficient and standard indicator. The discovered pattern is reflected in Table 2.

Table 1. Conversion of KP absolute indicators into KI

KI	Work efficiency	KP, mV
1	High	30-50
2	Increased	20-29
3	Average	12-19
4	Lowered	5-11
5	Low	0-5
6	Very low	Negative

Table 2. Conversion of absolute indicators of emotional adequacy into KI

KI	Emotional adequacy	$EKS_{plate} / EKS_{cylind}$
1	Very high	2
2	High	2.1-2.5
3	Average	2.6-3.0
4	Lowered	3.1-3.5
5	Low	3.6-4.5
6	Very low	4.6 and higher

The instruments for measuring KP and EKS are portable, have self-contained power supplies, and may be assembled in one case. It takes 20-40 seconds to examine one person by each method, and the measurement procedure does not produce any unpleasant sensations or aftereffects. Thus, these instruments are useful for conducting mass examinations under laboratory or industrial conditions.

In conclusion, we present a number of recommendations on the organization of labor within the framework of the indicated method system of monitoring work efficiency. The data, obtained as a result of research, enable us to systematize the general group and individual KP and EKS indicators as well as emotional adequacy for the purpose of determining their patterns, and to develop measures for group and individual optimization of work and rest conditions based on the established patterns.

The second state is organizational. This is experimental implementation, based on conducted research data, of measures for improving the work and rest conditions for any collective group and monitoring the efficiency of these measures with the use of the



same methods, as well as dissemination of the experimental implementation to all work collectives, providing the experiment yields a positive result.

The third stage is teaching the workers self-monitoring and self-regulation. The workers are taught the skills of self-monitoring, based on the principle of biofeedback, concomitantly with measurement of the KP and EKS indicators. To accomplish this, it is essential, after first questioning a person about self-evaluation of his mental work efficiency and emotional activity states (corresponding to KI in Tables 1 and 2), to compare the answer about KI with an objective KI measurement.

The training of workers to adequately monitor their own state will enable them, with its successful realization, to replace measurement with a self-monitoring process, which in turn is the preliminary stage of self-regulation training.

The means of objectively monitoring the state of labor collective members combined with the administrative measures for improving the work and rest conditions and the ability of workers to self-monitor and self-regulate provide an overall solution to the fatigue prevention problem.

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PUBLIC HEALTH

UDC 664:339]:008+614.79]:061.3(47+57)"1984"

CONFERENCE ON RURAL HYGIENE, USSR FOOD PROGRAM

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 9, Sep 84  
pp 57-58

[Article by Z. A. Volkova: "All-Union Conference on 'The USSR Food Program and Complex Hygiene Problems of the Countryside'"]

[Text] The conference was held in Kiev on March 27-29, 1984. Scientific and practical workers, and organizers of health care participated in its work. They discussed urgent questions of research on hygiene problems of the modern countryside, taking into account its special characteristics, and labor and living conditions, in particular: the role of epidemiological research in studying the health of the rural population, and how it depends on labor and living conditions; hygiene problems in modern livestock breeding and plant growing; urgent questions of hygiene of the environment of rural populated areas; hygiene aspects of feeding the rural population; the hygiene of women, children, and teen-agers in the countryside; and the advanced work experience of the sanitary-epidemiological service in the field of state inspection in rural areas.

Papers presented new data on the integrated physiological-hygienic assessment of labor conditions, and new technological processes, machines, and equipment used in the basic sectors of agricultural production. Agricultural jobs in fields were classified according to difficulty and stress, and recommendations were worked out on the rational organization of the regime of labor and leisure of machine operators and field crop cultivators. The conference presented materials on the combined effect of the vibration, noise, and microclimate characteristic of the workplaces of tractor operators. Data were obtained on integrated physiological-hygienic assessment of labor conditions at sites of industrial livestock breeding in various zones of the country. The impact of increased microbe contamination of the air of livestock-raising areas on the state of health of the workers was shown.

The conference shed a great deal of light on questions connected with the use of pesticides. It presented a toxicological and hygienic assessment based on the maximum permissible concentrations for new pesticides being adopted in agriculture. It studied the transformation of pesticides under conditions of enclosed ground, and the laws governing their absorption by hothouse substrates. It formulated hygienic regulations of the use of pesticides in various sectors of agriculture, with differentiation according to climatogeographic zones of the country. It presented suggestions for

improving the hygienic norm-setting of pesticides, taking into account the combined and integrated effect, according to the development of calculation methods; it determined the potential danger of long-term consequences of the influence of basic pesticide preparations on the body.

The conference confirmed the great significance of integrated social-hygienic research for sanitizing labor and living conditions. Social-hygienic research is being established to determine the nature and degree of the possible influence of pesticides on the health of the population, stressing the pre-nosological forms of appearance of pathology with a chemical etiology. The distribution of various diseases among workers of leading sectors of agricultural production has been studied. Based on broad epidemiological research carried out according to specially developed programs, the role of social-living, production, and other factors has been established in the development of individual diseases among workers of agriculture.

Conference participants presented the characteristics of labor conditions, the state of health, and the reproductive function among women occupied in livestock breeding, poultry farming, plant growing, feeds production, and the production of phosphorus mineral fertilizers. They formulated recommendations on the physiological-hygienic optimization of labor conditions and medical service for women in agricultural production.

Abstracts of the papers and recorded speeches have been published.

The conference passed a resolution which determines future directions of scientific research on various aspects of rural hygiene.

The conference emphasized the need to increase state sanitary inspection in the field of agricultural production under conditions of intensification, further mechanization, and chemization of agriculture, and the creation of new agroindustrial complexes and major livestock complexes.

The conference materials and their adoption in practice are the science of hygiene's contribution to realizing the USSR Food Program.

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## PUBLIC HEALTH

### FIRST MICROCENSUS OF USSR POPULATION

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 10, Oct 84  
(manuscript received 10 May 84) pp 3-6

/Article by A. G. Volkov, chief of Demography Department, Scientific Research Institute of the USSR Central Statistical Administration/

/Text/ A sampling sociodemographic population survey will be conducted in January 1985 in accordance with the decision of the CPSU Central Committee Politburo and on the basis of a USSR Council of Ministers' decree.

The purpose of this survey is to characterize the changes, which have taken place in the composition of the country's population in the period after the 1979 census, to obtain the necessary data for developing state plans of the country's economic and social development for the Twelfth 5-Year Plan and for a long-range period, to evaluate the effectiveness of the measures of the demographic policy, pursued in accordance with the decisions of the 26th CPSU Congress, and to develop the direction of its further improvement. The survey materials will provide the potentiality for studying population reproduction and its trends in depth, and for gaining some idea about the characteristics of the course of demographic processes in various sociodemographic groups and in different areas.

A sampling sociodemographic survey will be conducted starting 1 January 1985 at 00:00 hours throughout the USSR (except for the rayons of Krayniy Sever and some other rayons, which are difficult to contact in January) and will cover 5 percent of the population (approximately 14 million persons). For this survey, every 20th voting district based on the USSR Supreme Council elections is selected within the limits of a union republic (without oblast divisions), ASSR, kray and oblast. In the selected voting districts all persons living permanently in this area will be questioned. Specially-trained workers (counters) will conduct the survey during the period of 2 to 11 January. These workers, the same as in 1979, will be invited from enterprises, institutions and organizations for a short period.

In the period between population censuses the state statistical bodies make regular estimates of the number and age-sex composition of the population on the basis of census data and current consideration of demographic events (births and deaths), evaluate the class composition of the population and distribute

it according to education level. In addition, in the period between censuses, various sampling surveys are conducted, specifically once in 3 years, in which the following are studied: income and living conditions of families of manual workers, office employees and farm workers, as well as some questions of a demographic nature; a broad network for regular statistical surveys of family budgets has been organized. All the conducted surveys provide valuable data for the study of sociodemographic processes, however, they do not characterize the total population; as a result of the small sampling volume, the data are insufficient for obtaining reliable information on small areas.

The forthcoming survey is different in that it will cover all the population of the country with a so-called microcensus and will enable us to obtain data on population composition on the level of the union republics and large economicgeographic rayons as well as the individual ASSR, krais and oblasts. This will be the first survey of this type in our country.

The statistical services and public health services routinely gather a great number of various data for day-to-day scientific and practical needs. In discussing the program of the forthcoming survey, the question often asked was: why collect this or other information when it is regularly received as routine. One of the important advantages of these types of surveys (the same as all one-time surveys and population censuses, generally) is that they enable us to collect information simultaneously on each person, each member of the family, or the family as a whole. As a result, in subsequent processing of materials, data may be obtained on combinations of characteristics, which cannot be obtained in the day-to-day account of individual events.

For example, the statistical administration routinely gathers information on the number of persons employed in social production. Data are also reported on the number of persons having a certain level of education. Estimates of the population number and age-sex composition are made on the 1st of January of each year. However, combined distribution of the population according to sources of income, age and education level, which would show the differences in age composition of individual socioprofessional groups, may be obtained only by census or survey, providing all these characteristics are considered at the same time for each individual.

In addition, in order to study the trends and factors of demographic processes in different social groups of the population, methodically it is correct to compare the frequency of one or another demographic event in different population groups, thereby obtaining the so-called intensive factors. On the basis of data on current birth records, only extensive indicators (for example, distribution of births during the year according to mother's age) may be obtained. These extensive indicators are inadequate for studying the birth rate in different groups, and they may lead to error (for example, when young women work in a given area, then among the newborn there will be a greater number born to young mothers, although the birth frequency will be relatively low). Generally, such intensive factors are obtained by comparing the day-to-day information on number of births with the census data on composition of women. However, such data are not always comparable. Actually, completely comparable information is obtained in surveys, such as the number of births in this or other population group, the population number of the group itself and many sociodemographic groups as well.

All these advantages will be reflected in the forthcoming survey program. Together with the traditional questions of a population census, the survey program will cover a number of new subjects. The survey program, prepared on the basis of census experience and one-time surveys, will include five sections. The first section will contain information on each questionee, and basically will repeat the population census program of 1979. This includes sex, birth year and month, nationality, marital status, education level, type of learning institution the questionee is attending, source of income, and social affiliation /class/.

However, a number of innovations have been introduced into this section. For the first time, the head of family category has been eliminated. Since, at the present time, members of a family may represent different social groups, the characteristics of the family head no longer give an idea of the social class of the family as a whole. We would remind you that in recent censuses the selection of one of the family members as family head has been left to the questionees themselves. This category in the census was used only to determine the structure of a family, and to separate one family from the others. For these purposes, blood relationship to any family member may be indicated. In this survey, relationship to the first adult, recorded in the questionnaire, will be reported.

There will be five, not four categories, in the section on marital status: never married, married, widowed, divorced and separated.

For the first time, a question on average monthly income for 1984 will be included in a survey on this scale.

A change in the formulation of the question on migration has been provided: has the questionee been living in the present community since birth or has he come from another area, since what year has he been living continuously in the present community and where did he come from--an urban or rural area. This information will provide an opportunity to study the composition of migrants and factors of migration, and to understand their influence on demographic processes.

In the sections on births and marriages, the information is gathered by a so-called anamnestic method. In respect to marriages, the year of the first marriage is reported, and the year and reason for its termination (death of spouse or divorce), for those marrying again--year of second marriage. This will enable us to reconstruct the marital life history of the questionees, and to evaluate the nature and characteristics of family formation. Up to this time, it was the marital status of women that was mostly studied in surveys of this type. For the first time, data on the marital status of men will be obtained in this survey. The survey materials will enable us to obtain information on the frequency of second marriages, study the relationship between marriage stability and number of children, and determine the relative influence of divorces and deaths of spouses on marriage stability /sic/.

The question about the expected number of children ("How many children do you plan to have?") that will be asked of married women ages 18-44 years, will enable us to estimate the long-range birth rate, essential for its projection.

In this section there will be questions for women who have given birth since 1979 about whether they were working or studying in the year they gave birth, and whether they took maternity leave to care for the child up to the age of 1 or 1½ years. This group of questions will enable us to obtain information on the effectiveness of state aid measures to families in accordance with the well-known decree of the CPSU Central Committee and USSR Council of Ministers, and to evaluate the influence of these measures on the birth rate level in individual population groups.

A special section of the program will be devoted to housing conditions of the population. This information combined with other data will enable us to study the influence of isolation and comfortability of living quarters on demographic processes.

The program also provides for asking people's opinions on what social problems should be solved first: improvement in providing the population with food products, increase in the variety and improvement in the quality of industrial goods, improvement of housing conditions, improvement of labor conditions, improvement of medical services or others.

In addition to the basic survey form, for each able-bodied person engaged at the moment of the survey in private plot farming and not studying, a questionnaire will be filled out that contains the objective characteristics of the given person, such as the reason for unemployment, conditions under which the questionee could participate in social production (job close to home, shorter work day, work that can be done at home, etc.), number of children under 16 years of age, and whether children need to be placed into preschool institutions. The obtained information will provide material for studying the composition of manpower and its utilization.

These survey materials will be important for deepening and improving the socio-hygienic research in the country: they will provide valuable material for analyzing the demographic situation in different areas and for conducting comprehensive medicodemographic research; they will enable us to obtain detailed information on the sociodemographic population composition of each area (oblast, kray, ASSR, union republic), which may be used in planning and organizing health services; and, will provide a potentialty for obtaining data on morbidity and health of population among the various sociodemographic groups. The latter may be realized in two ways: by calculating the relative indicators of morbidity according to population groups (a comparison of the number of cases of sickness in various population groups with data on the population of the corresponding groups according to survey results); by copying onto a single document the information on the questionees from the survey questionnaires and medical documents (illness histories, etc.). Experience of this type of investigation, conducted under the supervision of M. S. Bednyy using materials of the test population census of 1967 in the Naro-Fominsk Rayon of Moscow Oblast, showed that such interrelated processing of data from different sources may provide valuable material for research.\*

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\*M. S. Bednyy, S. I. Savvin, G. I. Styagov, "Sotsial'no-gigiyenicheskaya kharakteristika zaboilevayemosti gorodskogo i sel'skogo nasel'niya" /Sociohygienic Characteristics of Morbidity of Urban and Rural Populations/. Moscow, Meditsina, 1975.



It should be pointed out that the selected voting districts may serve as a base for conducting additional questionnaire surveys in the following years (for example, sending out questionnaires by mail after completion of the basic survey). On the basis of these questionnaires, a selection of the population may be made for conducting preventive medical examinations and other research studies, as well as for studying individual urgent problems of sociohygienic and medicodemographic research.

Of course, the carrying out of this type of one-time studies on the basis of a survey involves certain methodical difficulties. For example, since provisions are made to question only the residents of selected voting districts, in order to obtain comparable data, the information that is selected in the medical documentation must be on the residents of the very same territories, whose boundaries may not necessarily coincide with the boundaries of the medical uchastoks. The mailing of questionnaires to a number of questionees will require a selection of these persons, copying of addresses, determining to which family member such a questionnaire should be sent, etc. Agreement on all these questions must be reached with the local statistical organizations.

The conducting of a survey is of great political and scientific importance. Public health organs may be of great assistance at all stages of the preparation and carrying out of this survey. The direct participation of VUZ medical students in the questioning would be good experience for them in medicostatistical observations. The participation of public health organizers and medical workers in carrying out this survey should be a good example of cooperation and creative collaboration between statisticians and social hygienists in studying the pressing problems of demography and social hygiene.

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PUBLIC HEALTH

INTERNATIONAL GROUP ON INFECTIOUS DISEASES

Vilnius KOMSOMOL'SKAYA PRAVDA in Russian 23 Nov 84 p 3

[Excerpt] At the present time 55 scientific organizations from Bulgaria, Hungary, Vietnam, the GDR, Cuba, Mongolia, Poland, Romania, the USSR, and Czechoslovakia are participating in studies on problem "7" (that number signifies the complex problem of the fight against infectious diseases in the plan for scientific and technical cooperation within the framework of the SEV [Council of Mutual Economic Aid] Permanent Commission for cooperation in the field of health care). They have been entrusted with heading separate sections of the general problem. At the same time the obligations of international coordinator have been placed on the GDR (the Epidemiological Center of State Inspection). Naturally, each of the countries concentrated its efforts on those scientific trends that are of great interest for the national health care system.

A significant part of the joint work is in the synthesis of new preparations and the testing of medicines, and the development of laboratory instruments and diagnostic devices. And in this matter we try to avoid duplication. Say in the CSSR production of high quality sera has been started, in the GDR methods for studying microbial cells, including the so-called plasmids, are being intensively developed, and in our country an industrial set has been developed to evaluate antigens.

In the near future we will have to test an entirely new form of cooperation. We are talking about the "Temporary International Scientific Collective", which is supposed to be set up in Vietnam. Its work will be dedicated to the fight against tropical malaria.

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ORGANIZATION OF IN-PATIENT TREATMENT OF EYE PATIENTS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 8, Aug 84 pp 16-17

[Article by L.A. Zaslavskaya, Tselinograd Oblast Clinical Hospital]

[Text] Beginning in 1976, a chronic shortage of hospital beds prompted us to review the organization of treatment in the eye department of the Tselinograd Oblast Hospital for the purpose of finding internal resources to increase specialized hospital care for the populace. First of all, we defined a clear list of indicators for the hospitalization of patients needing in-patient surgical treatment. First we began to admit patients with acute vascular pathology of the retina and optic nerve and with acute inflammatory diseases of the retina, vascular tract, and optic nerve in the absence of effect from out-patient treatment. Patients sent for the planned operative treatment are without fail completely examined as out-patients in city and rayon polyclinics according to the scheme worked out for every nosological form.

The planned hospitalization is conducted on the basis of advance appointment and is carried out on certain days of the week: Monday and Wednesday for surgical patients (the day before the operating day), and Friday for those needing conservative treatment.

As a rule, the planned patient is operated on on the day following admittance (the average hospital stay prior to the operation for cataracts is 1.4 days, and for strabismus, 1.0 day).

Patients coming for conservative therapy begin receiving complex treatment from the day of admittance.

On Mondays, on the rounds of the department and section head, the treatment is amended and the discharge plan is determined for the week.

The institution of a number of rationalizer proposals (an operating table-microscope, remote control for the apparatus that checks visual acuity, a standard format for the records of operations, and others) has helped to improve working conditions, reduce the time needed to examine a patient, and speed up the filling out of documents. All these measures are combined simultaneously with the transfer to the microsurgical technique of operating, which has allowed a significant reduction in the time of in-patient treatment thanks to minimal traumatization of tissues, thorough sealing of wounds, etc.

As a result, surgical activity comprises 64-69 percent, beds are occupied 351-358 days per year, the average length of a patient's stay in bed is 16.0-15.4 days, and bed turnaround is 21-22.

A permanent and systematic reduction in the average length of a patient's hospital stay has allowed the economic effect to be calculated. In the first years of this work it was fairly high: 12-19,000 rubles per year. In the last 2 years, when a definite limit in the reduction of average bed-days has been reached, the economic effect comprises 2,500 rubles per year.

In this way, the previously selected contingent of patients for in-patient care and careful pre-hospital examination have allowed the efficiency of utilization of the bed supply to be increased by 12-15 percent while preserving the quality of the product of hospital care.

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PUBLIC HEALTH

WORK REHABILITATION FOR GERIATRIC PATIENT

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 10, Oct 84 pp 12-16

[Article by L.P. Leont'yeva, Republic Polyclinic of the Kazakh SSR Academy of Sciences (chief physician--K.A. Arymbayev), city of Alma-Ata]

[Text] Interest in gerontology is not accidental. For the past four decades in the USSR, as in other industrialized countries in the world, a "demographic explosion" has been noted--the proportion of individuals in older age groups in the general structure of the population has increased significantly. For example, in the countries of Western Europe, including the USSR (D.F. Chebotarev), at the present time, more than 50 million people will live to the age of 60 and older, and the index for demographic aging will exceed 13 percent (of the total population of these countries). According to prognoses for the year 2000, these figures will increase to 77 million and 17.7 percent, respectively. This means that not only will the number of healthy (with physiological aging) individuals increase, but also the number of non-working individuals who require additional care will grow (with birth rate aging).

The progressive demographic aging of the population gives rise to many new economic, social, medical, and moral problems related to maintenance of a healthy and active long life.

We have assigned a different value to this phenomenon than other foreign countries.

Foreign theoreticians have spoken of the "drama" of prolonging life, of the conflict between young and old generations, and of an increasing coefficient of dependence, which becomes a burden for society. Supposedly, society is not prepared to take on such a large cohort of elderly people.

In socialist countries, where science and training are supported, there is no place for despair and pessimism, and the increase in the proportion of elderly in our society is not feared. Their inheritance to us is their wise experience. The thoughts of our scientists are directed to the fact that in order to make the life of elderly people full and interesting, it is necessary to add not only "years to life," but also "life to years."

This is expressed also in the legislative documents of our party and government. In the resolution of the CPSU Central Committee and the USSR Council of Ministers "On Additional Measures for Improving Health Maintenance of the Population" it is stated that: "We should concentrate our attention on further development of prophylaxis for disease, trauma prevention, sanitation of the environment, improvement of the conditions of labor, living conditions and recreation, and training the soviet people for a more conscious attitude toward maintenance and strengthening of their health."

Medical workers and all soviet people must participate in the realization of these directives--to improve systematically the cleanliness of the biosphere, to resolve successfully the questions of ergonomics, to maintain the health of those who work, to create new hospital-dispensaries and new recreational areas, and to conduct a uniform dispensary system for the population which will enable early detection of disease and "risk factors" so that well-timed medical intervention for patients will occur.

Unfortunately, up until this time, pensioners and others had a careless attitude toward their own health, carrying out a disorganized, irrational life style, paying little attention to the unhealthy conditions of the environment, shortening their life span with harmful habits, and resting only when they are no longer healthy. To train the soviet people to have a conscious attitude for maintenance and strengthening of their health, medical workers must not only accustom the population to hygienic habits but must also teach a socialist form of life, prepare them psychologically to enter their pension year and teach the population not to deteriorate.

Medical workers, in extending aid to the geriatric patient, frequently go beyond the scope of fulfilling the purely medical tasks, and their activities, for a time, acquire a marked social direction.

If one takes into account that among the number of 60 year old individuals and those who are older, more than 20 percent of this age group is comprised of people who are alone, frequently with limited capacities for self-care, who require outside aid, it becomes clear that the doctor can not be restricted only to formal visits to examine the patient and prescribe medication, but, must also make this visit in a spiritual sense, to create the appropriate optimal adjustment, to instill a belief in recovery, to fight the tendency of isolation from those who surround the patient, and to counteract reticence. The doctor should meet the neighbors, and not forget about the material needs of the isolated person such as purchasing for him the necessary products from stores. The doctor should try to attract the services of Young Pioneers, enlist the mutual assistance of similar-age individuals, friends, and people from the council of pensioners. In fact, they can set up delivery of food, newspapers and medicine to the home. The doctor should make contact with establishments which participate in providing the population with various forms of service. The doctor should facilitate for the patient a desirable involvement not only with the district medical nurse, who must actively visit the patient, but also with the medical nurse of the Society of the Red Cross and the Red Crescent. When it is necessary to make contact with the department of social service, the doctor should deal with pension questions, organize a trustee, or relocate the patient in a center for chronic care or in a home for the elderly.

After convalescence, the doctor is obligated to participate in the work rehabilitation of the patient, to recommend to him work appropriate for his age and health. Important in this role of social service is the collective where the pensioner previously worked.

The organs of social service are obligated to take care of the regular and timely delivery of the pension to the home, needed to provide material aid, and distribute a pass to a health resort. Activists from the home administration must visit the pensioner frequently, as should representatives from the previous place of employment to invite him to celebrations and to meetings with youth.

The tactics for management of the geriatric patient differ from the tactics for management of the individual of a mature age.

For treatment of the geriatric patient, it is necessary to adhere to a series of required positions, advanced by academician D.F. Chebotarev and professor O.V. Korkushko (Institute of Gerontology of the USSR Academy of Medical Sciences).

1. Treatment of the geriatric patient must be strictly individual, taking into account his specific pathology; the principle of "treat not the disease but the patient" should be adhered to.
2. Drug therapy should be only one component in a comprehensive complex of therapeutic measures and should be carried out on the basis of a unique "code for longevity"--the law of orthobiosis (the correct organization of work, nourishment, physical and psychological rest, personal hygiene, etc.).
3. Medication should not be used if another therapy is possible (therapeutic sports, massage, hydrotherapy, the proper life style, and others).
4. In the mature and elderly individual, polymorbidity is often noted--the number of diagnosed illnesses in one and the same patient can be from five to ten. They are characterized by an atypical, areactive presentation with a flattening out of clinical manifestations. It is not necessary to treat all the diseases at the same time, instead concentrating on the main ones which are most burdensome.
5. The principle of "do no harm" should be adhered to strictly. The therapy for the mature and especially, the elderly person, should be limited to the smallest amount of medication, the choice of which should be the most simple.

Self-therapy must be categorically forbidden, and the possibilities for its harmful consequences should be explained to the patient--the occurrence of drug-related illness and other complications.

6. With the exception of urgent-emergency aid, or existing therapy (diabetes), or the use of antibiotics and sulfanilamides, other therapeutic

substances should be prescribed (basically) in half or a fourth of the adult dose. This particularly applies to cardiac glycoside, sedative and neuromuscular, hypotensive and hormonal agents, and to the group of opiate substances and their synthetic substitutes. It is recommended that the initial doses of these substances be two times lower than the general dose level. For achievement of a therapeutic effect, the dose should be decreased and a maintenance dose determined which, as a rule, should be lower than the one given to people of a mature age.

7. Therapy should be conducted using geriatric substances: geroprotectors which normalize metabolic processes, activate functions of many organs and systems, strengthen adaptational and compensatory mechanisms, and increase the vitality of the organism.

We think it would be desirable to share an experiment which we conducted in the Republic Geriatric Center of the Polyclinic of the Kazakh SSR Academy of Sciences (city of Alma-Ata). During the course of four years, once every half-year, we conducted on geriatric patients, for the purpose of prophylaxis, a complex therapeutic course using geroprotectors: oxygen therapy (enteral-oxygen cocktails), vitamin microelements, antioxidants, biogenic stimulators, hormones and other forms of drug substances.

Drug therapy was conducted against a background of psychotherapy and autotherapy.

As a result, in these patients (in comparison with a control group, not receiving geroprotectors), there was a more rapid course of recovery, cheerfulness developed, work capacity and creative activity increased, and many non-working pensioners returned to work.

The above-mentioned method for rehabilitation of geriatric patients has been introduced in every polyclinic. However, prior to introducing this therapy to patients, recommendations are given regarding organization of the correct life style. It is also necessary to create a favorable psychologic adjustment. In fact, by itself, going on pension is often connected with certain psychological strains, especially if the person is ill, does not have useful employment, is sharply limited in social contacts with society and if family interrelationships are altered. All this can have a negative effect on the psyche of the elderly person. It often happens that the individual becomes mistrustful, quick to take offense, loses interest in his surroundings, or, conversely, becomes unnecessarily talkative and obtrusive. Here, it is necessary to instruct him in the correct appreciation of events, mobilizing his will to find escape from difficult situations, to strive for the significant and to find joy in the small. With the aid of autogenic training, his mind can be trained to direct his emotions so that he forces himself, even if only for an hour every day, to be an adjusted happy person. If negative emotional outbursts occur in the family, while maintaining deontology, the doctor should chat with members of the family to aid in constructing a cordial family atmosphere, and to avoid alienation and stress.



Without the appropriate psychological framework, the influence of even the most active drug therapy can be reduced to nothing.

The doctor must remember that there is not necessarily a connection between age and illness. If work proceeds in advantageous conditions, taking into account sex and age, an appropriate work load for the organism in the course of the day can be balanced with reasonable breaks, and if material and spiritual importance are created, such labor is not only useful, but is also necessary because it will have an advantageous effect on metabolism, the cardiac, muscular, neurologic and a whole series of other systems.

It has been statistically proven that without employment, a person after two years, and at the maximum, three, retreats from life because of the so-called "pensioner's disease" (in foreign countries, this state is referred to as "pensioner's bankruptcy"). Health deteriorates and is accompanied by a resulting perception of approaching social uselessness or limited usefulness for society and those close to him, leading to a crisis in the dynamic stereotype of the individual.

To avoid "pensioner's disease" the psyche of the future pensioner should be prepared five years before retirement on pension, attentively examining the working professional itinerary of the patient, in order to recommend a more suitable profession, for which he has work experience. Organs for social service can direct him to a course of worker training to acquire a new profession. One should explain to the pensioner which exemptions he can take advantage of.

Work in the home is widely recommended to the pensioner, as is various forms of social work.

According to our data, many pensioners retain their work capacity not only in the first decade after retirement on a pension, but for a significantly longer period than that. The author has studied the life style and aging of more than 1,000 advanced-aged individuals.

An unforgettable impression was left by Koppas Ilyusizov (Alma-Ata), who, in his 100th year, retained his memory, intellect, and interest in people. In his 97th year, he translated from Arabic into the Kazakh language several works of Al'-Farabi.

For 15 years, I observed Tat'yana Semenovna Frolova, who lived to be 125, and was astonished daily by her activity and work capacity.

Prokopiý Aleksandrovich Ostroverkhov is 100 years old and he, up to this point, works as a door-keeper in a restaurant at the "Medeo" complex.

According to the contemporary concept of aging, there is an internally contradictory process in which deterioration, disturbance of metabolism and function, and shortening of adaptational possibilities are combined with the development of important adaptational mechanisms.

The doctor must direct his efforts to increasing the reliability and durability of these adaptational mechanisms, and not assume their failure, which occasionally is observed during rush work, overstrain and overwork. Therefore, it is necessary to recommend organization of a work rhythm so that rest occurs before overstrain does, insuring that the person relaxes daily and weekly. The patient should not use time off for finishing incomplete tasks, but should go to the forest, in the lap of nature, on tourist pathways.

Of great importance is movement, movement and more movement. The doctor should direct his patients to systematic participation in therapeutic or morning hygienic gymnastics, meeting with a group of healthy people, and he should also recommend prescribed walks, and moderate recreational games (badminton, gorodki [skittles], skiing, skating, bicycle riding).

These directives should also be applied to food intake.

Gerodietetics involve rational, balanced nourishment with adequate quantities of vitamins and trace elements, and restricted use of fat and carbohydrates. The optimal caloric intake should be 2,100 to 2,300 calories per day, but this norm can be altered in relationship to age and work performed.

It is necessary to conform to a certain rhythm in eating. Food should be taken four to five times a day at precise intervals. "Risk factors" should be avoided such as overeating, smoking, and alcohol abuse.

As an indication of the specialized aid available in our republic, 13 geriatric centers function which, in conjunction with district doctors and highly specialized personnel, carry out complex rehabilitation of geriatric patients. In those places where there are no such centers, this type of work must be carried out by district therapists. To provide competent aid to the geriatric patient, each doctor should strive to learn the specialty of geriatrics.

A course of gerontology and geriatrics is included in the program of medical institutes, medical schools, and institutes for advanced training of doctors. The profession of the geriatric physician has become more popular and respected.

The USSR Ministry of Health has developed perspective plans with the goal of the creation and improvement of the work of geriatric services in different republics including Kazakhstan.

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PUBLIC HEALTH

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LABOR HYGIENE FOR WOMEN, USSR FOOD PROGRAM

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 9, Sep 84  
pp 1-4

[Article by Z. A. Volkova and V. A. Buzunov, USSR Academy of Medical Sciences Institute of Labor Hygiene and Job-Related Illnesses, Moscow, and the Institute of Labor Hygiene and Job-Related Illnesses, Kiev: "Urgent Questions of Labor Hygiene for Women in Light of Realizing the USSR Food Program"]

[Text] Realizing the USSR Food Program is introducing substantial changes into the conditions and character of labor in agriculture. At the same time there is arising an array of hygiene tasks connected with ensuring working conditions of labor which are safe for health.

The USSR Food Program calls for integrated mechanization of agricultural production, including technology and equipment for plant raising, livestock breeding, land reclamation, forestry, and so forth. The fleet of energy-saturated [energonasysshchenyye] tractors is being increased. Integrated mechanization is being carried out in potato raising, cotton growing, beet growing, flax growing, and so forth.

In realizing the tasks put forward by the Food Program, a great role belongs to the working women of the countryside. In 1982 the proportion of women among all kolkhoz members occupied in the social operation of kolkhozes amounted to 46 percent throughout the USSR as a whole, and 51 percent in these individual republics: Georgia, Azerbaijan, and Moldavia.<sup>1</sup> Women are employed in practically all sectors of the economy.

The development of the material-technical base of agriculture and integrated mechanization of a number of production processes is substantially lightening and improving labor conditions for working women in agriculture. At the same time, research shows that working women of a number of types of agricultural production are subject to the influence of a number of unfavorable factors of the labor process and the environment. In the 10th and current five-year plans research on questions of labor hygiene for women and agricultural production has been substantially expanded and intensified. Questions of



labor hygiene for women are successfully being formulated in various subsectors of livestock breeding, the production of agricultural goods under conditions of enclosed ground, cotton growing, intensive industrial horticulture, citrus growing, viticulture, tea growing, and so forth.

The Kiev Institute of Labor Hygiene and Job-Related Illnesses has carried out comprehensive research on the labor and living conditions, the state of specific functions, and gynecological illnesses of women living in rural areas in different climate zones of the Ukraine. This research has made it possible to determine the nature and structure of disruptions of specific functions and gynecological illnesses, and also characteristics of the pathology of sexual organs in women who are livestock breeders and beet growers. Certain disruptions of specific functions and the course of gynecological illnesses have been shown to depend on the characteristics of labor conditions. The materials of this research have laid the foundation for methodological recommendations for the sanitizing of labor conditions and preventing disruptions of specific functions and gynecological illnesses in women who work on livestock farms and beet farms. Methodology has been proposed for evaluating the working capacity of women beet growers and livestock breeders based on physiological and production-economic indicators.

Comprehensive research is being carried out on the characteristics of labor conditions and the state of health of women who work in livestock breeding complexes with a meat and dairy profile (Kuba, Kuybyshev, and Stavropol medical institutes, the Kiev Institute of Labor Hygiene and Job-Related Illnesses), pork breeding (the Saratov Institute of Agricultural Hygiene, the Institute of Epidemiology, Microbiology, and Hygiene, Vilnius), poultry farming (the Central Scientific-Research Laboratory of Riga Medical Institute), and sheep raising (the Kazakh Institute of Regional Pathology). The results of this research have established that integrated mechanization of work processes have effectively ensured optimization of the difficulty of labor for operators. At the same time, increasing the number of head of livestock and expanding the zone of service have caused an increase in the nervous-emotional strain and the tempo of work. The atmosphere of the working zone contains increased concentrations of dust from animal and plant sources, biofeeds [biokormy], and increased concentrations of microbes and fungi. The technical equipment in use at livestock-breeding complexes is a source of noise which frequently exceeds admissible levels.

The structure of diseases of women working in livestock complexes includes predominantly diseases of the respiratory organs, the skin and subcutaneous fat, the osteomuscular system, and so forth. According to data of the Central Scientific-Research Laboratory of Riga Medical Institute, women working in poultry plants have a number of diseases of an allergical nature: allergic rhinopathy, conjunctivitis, dermatitis, eczema, bronchial asthma, and chronic asthmatic bronchitis, which are connected with the body's sensitization to the effect of allergens from down, feathers, and mixed feeds. Determining the nature of allergens makes it possible to implement early diagnostics and purposeful hygienic and treatment-prophylactic measures.

The data put together testify that formulating the hygienic-prophylactic requirements to ensure labor conditions safe for health at livestock and poultry farms continues to remain a pressing problem.

A great volume of research on various aspects of labor hygiene for women in agriculture is being carried out by the Georgian Institute of Labor Hygiene and Job-Related Illnesses. Scientists are studying the labor conditions, health, sanitary-consumer service, and medical service of women occupied in citrus growing, viticulture, tea growing, and hothouse farming, who come in contact with mineral fertilizers and pesticides. The research now being done at the institute is very urgent--research on the impact of agricultural chemical substances on women's bodies, their specific functions, and their offspring. Based on the results of research the institute has prepared and published recommendations for the sanitization of labor conditions of working women of these industries.

Great integrated research on labor hygiene for women in cotton growing has been done in the Tashkent Medical Institute. Data have been obtained on the labor conditions, work capacity, and health of women who operate machines, and also the corresponding materials for carrying out nonmechanized work. The results of research formed the foundation for recommendations to regulate women's labor and leisure in various stages of cotton cultivation, and organize their nutrition.

Recently the production of vegetables in enclosed ground has attained more rapid development. According to the data of the Saratov Institute of Agricultural Hygiene, the USSR Academy of Medical Sciences Institute of Labor Hygiene and Job-Related Illnesses, the Ryazan Medical Institute, and others, labor conditions in hothouses are characterized by the influence of an array of harmful factors: pesticides (about 40 varieties), the high temperatures and humidity of the air, heavy physical labor, and the working posture necessitated. For working women an increased level of pathology is observed for the respiratory organs, digestive organs, urogenital and cardiovascular systems, the skin, and subcutaneous fat. These data enable us to consider the task of physiological-hygienic optimization of labor conditions in hothouses, as well as improvement of the treatment-prophylactic aid to this category of workers, as extremely important.

According to the observations of the Kiev Institute of Labor Hygiene and Job-Related Illnesses, the Saratov Institute of Agricultural Hygiene, and the All-Union Institute of Labor Protection in Agriculture (in the town of Orel), there is a certain tendency to reduce the number of women working in tractors and combines. Among the reasons making it undesirable for them to work in agricultural machines are the noise, the increased temperature of air in the cabs, the heavy physical labor of driving them, and the nonrationalized regime of labor and rest time. Women who operate machines have an increased level of gynecological illnesses, disruptions of specific functions, and disruptions of the course of pregnancy and birth. Using the materials of these formulations the Saratov Institute of Agricultural Hygiene has prepared recommendations on the labor hygiene and medical service of female machine operators.

Questions of labor hygiene for women in tobacco growing and modern intensive industrial horticulture are being formulated in the Kishinev Medical Institute. An assessment of the labor conditions, difficulty, and stress of jobs in these sectors has been made. The negative effect of certain volatile chemical components of tobacco on the reproductive function has been established.

In connection with the characteristics of the technology of cultivating industrial orchards, questions of the hygienic regulation of the vacation periods for workers on the plantation after the orchards are processed with pesticides deserves special study. This task also holds with regard to the vacation periods of workers in sections of forest which are subject to spraying by pesticides.

Agriculture's continuously growing use of chemical and biological means of processing the soil and plants demands that we strengthen preventive sanitary inspection in this field. In setting the hygiene norms for use of such substances it is necessary to take into account the periodic nature of their use, the ability of many pesticides to penetrate through the skin integuments, the combined effect of chemical compounds, and the combination of them with unfavorable weather and climate conditions.

Many agricultural jobs demand substantial physical effort. In deciding questions of the order of mechanization of manual labor, it is necessary to take into account the new norms of maximum permissible loads for women for lifting and moving loads by hand, as established by decree of the USSR State Committee on Labor and Social Questions and the AUCCTU Presidium (1982).

In connection with creating a multitude of equipment for various types of agricultural jobs, a pressing task is the physiological-hygienic substantiation of ergonomic requirements on the construction of mechanisms to be operated by women, taking into account the anatomical-physiological characteristics of their bodies.

Great significance pertains to developing psychophysiological foundations of job counseling and job fitness of young women for jobs using agricultural machines of various types.

Special attention should be paid to adopting rational regimes of labor and leisure for women occupied in various types of agricultural production, especially in livestock farming, where many still labor under conditions of a fragmented working day, which worsens the chances of rest, taking care of the family, and feeding children. It is necessary to adopt progressive regimes of labor, taking into account physiological-hygienic and social requirements.

Many types of agricultural labor make it necessary to use special clothing, shoes, and forms of individual protection, and in the forthcoming period it will be necessary to expand research in this field, taking into account both labor conditions in specific agricultural industries, and the characteristics of the female body.

Alongside of model sanitary-consumer service of women at certain farms, on many agricultural sites the necessary set of rooms and arrangements is lacking or else is not used as it was intended.

In order to protect the health of women laboring in the countryside, improvement is needed for the treatment-prophylactic service, including dispensarization, taking into account the specific labor conditions of the woman, and family-living conditions.

Special attention should be paid to questions of protecting the labor and health of women during pregnancy, since many factors of agricultural production have to some degree an unfavorable effect on the reproductive function. This question requires further study.

A number of scientific-research establishments of hygiene and obstetric-gynecological profiles have developed the "Recommendations for Job Placement of Pregnant Women in Enterprises of the Ministry of Agriculture," which set lists of jobs for which the labor of women may not be used during the period of pregnancy or for which the output norm must be lowered. The document recommends professions and jobs which correspond to the requirements of optimal job placement of pregnant women. The document was discussed and approved at a joint session of the section of labor hygiene for women of the problems commission "Scientific Foundations of Labor Hygiene and Job-Related Pathology" and the section of labor hygiene for women in agricultural production of the problems commission "Scientific Foundations of Hygiene in the Countryside," which are working constantly in close contact.

The adoption of measures to improve labor conditions and treatment-prophylactic service for working women in the countryside, aimed at preserving their health, simultaneously promotes realization of the USSR Food Program.

#### FOOTNOTE

1. "Zhenshchiny v SSSR, 1984. Staticheskiye materialy TsSU." [Women in the USSR, 1984. Statistical Materials of the Central Statistical Administration.] Moscow, Finansy i statistika.

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VETERINARY MEDICINE

CONFERENCE ADDRESSES DISEASE DIAGNOSIS IN FARM ANIMALS

Moscow VETERINARIYA in Russian No 9, Sep 84 pp 71-73

[Article by G. F. Koromyslov and A. V. Golikov: "Scientific Coordination Conference of CEMA Countries"]

[Text] A CEMA conference to coordinate scientific research on cattle and swine gastrointestinal and pulmonary diseases was held in the city of Vratsa (Bulgaria).

I. Sisow et al. (Bulgaria) conducting research with the hemagglutination inhibition test on paired blood sera from 68 stricken calves established an increase of the antibody titer to cattle coronavirus in some of them. Two coronavirus cultures were isolated from calf trachea and kidney cell cultures inoculated with secretions from the nasal cavities of 14 animals.

Two groups of calves having blood serum in which antibodies to coronavirus were and were not present were inoculated with culture III 214/81. Clearly pronounced clinical signs were not evident with intratracheal infection of both groups of animals, but a short-term rise in body temperature to 40°C and coughing were noted.

Coronavirus was discovered in mucosa from the nasal cavities of three calves and in the feces of one. Positive immunofluorescence of cell cytoplasm was observed when cell cultures were infected with exudations from the nasal cavity. Two calves that were maintained with artificially infected calves became infected.

The authors conclude that cattle coronavirus takes part in respiratory diseases of calves.

A. Bartha et al. (Hungary) reported that a vaccine against infectious rhinotracheitis, viral diarrhea and adenovirus infection is widely employed in the country. They established that papulous stomatitis virus can activate adenoviruses, herpes viruses and diarrhea virus of cattle.

It was also emphasized in the report that to prevent disease, calves should be fed sufficient quantities of colostrum, since passive immunity to diseases

does not persist long. Moreover crowded maintenance of animals, dampness and other shortcomings in sanitation and microclimate in animal buildings and stress also promote disease among newborn calves.

The authors recommend using inactivated vaccines twice with an interval of 2 weeks, with the last injection being made 3 weeks prior to calving; live vaccines should be administered 35 days prior to calving. An effort should be made to see that the first vaccination is made in the supplying farms.

L. Csontos (Hungary) noted that cattle viral diarrhea, infectious rhinotracheitis, adenovirus infections, parainfluenza-3, and reo-, rota- and coronavirus infections are diagnosed by direct and indirect methods at the country's farms.

Among others, infectious rhinotracheitis virus and viral diarrhea may be the causes of abortions among cows. The abortion problem has been studied poorly in relation to viral etiology. Two or three viruses are often isolated from the same calf. Analysis of paired sera lengthens the time it takes to make a diagnosis.

H. Haralambiew (Bulgaria) communicated a method of diagnosing rotavirus infection in calves using the ELISA immunoenzyme method. When applied to 20 samples of feces from sick calves, the immunodiffusion test produced 28.5 percent positive results, while the ELISA method produced 42 percent. The highest titers were detected between the 4th and 7th days of illness.

When pregnant cows were immunized against coronavirus infection subcutaneously, perianally, in the vulva, in the lymph nodes and in the two posterior lobes of the udder (between the 15th and 30th days), the highest antibody titers were observed in the milk of cows after calving when the latter method was employed; in this case class A immunoglobulins were synthesized primarily.

On the basis of the obtained results the author recommends immunizing pregnant cows in the vulva to prevent intestinal viral diseases.

I. Iwanow et al. (Bulgaria) used live vaccine from attenuated *C. dublin* strain to eliminate paratyphoid in calves. Anaphylactic shock was noted in certain calves following vaccination. Epinephrine was injected into the animals to control the latter, and caffeine was used to prevent it.

I. Stepanek et al. (Czechoslovakia) revealed rota- and coronavirus and enteropathic strains of *E. coli* in analysis of 156 samples of feces from sick calves (diarrhea was present among other signs). Rotavirus was isolated from 36 animals, rotavirus was isolated in combination with other disease agents in 17, coronavirus was isolated in 29, the latter was isolated together with rotavirus and enteropathic *E. coli* strains in 13, *E. coli* was isolated in 11, and the latter was isolated together with rota- and coronavirus from 12 animals.

Enteropathic *E. coli* strains usually occurred in calves up to 5 days old, rotavirus was found in calves 5-10 days old, and coronavirus was dominant in older animals.

Consequently the principal etiological factors associated with respiratory diseases are rhinotracheitis virus, parainfluenza-3, diarrhea virus, adenoviruses, reoviruses and various bacteria that complicate the course of illness; failure to comply with the rules of grouping animals and incomplete nutrition are other etiological factors.

In order that these diseases of calves could be controlled successfully, large animal husbandry complexes must conduct specific preventive measures and comply with the rules of maintaining, grouping and raising uniform groups of animals. Moreover improvements must be made in methods of quick disease diagnosis.

L. Molnar (Hungary) isolated pleuropneumonia agent from 60 percent of sick pigs and from 3 percent of healthy pigs. The disease is observed most often in gilts weighing 30-40 kg, and unfavorable factors aggravate its course. It is transmitted by the respiratory mechanism. Up to 80 percent of the animals fall ill, and up to 20 percent die.

The diagnosis is made on the basis of bacteriological and serological analyses, and clinical, epizootological, pathological and anatomical data.

The disease is treated by antibiotics (of the tetracycline group), and it is prevented by inactivated vaccine, which kept 95 percent of the animals of an experiment from becoming infected, while contraction of the disease was 100 percent in the control.

N. Milew et al. (Bulgaria) observed illness in pigs entailing affliction of the respiratory organs. A virus which was isolated from lungs and lymph nodes in virological analyses was typed as being closely related to human influenza A virus (Victoria 3). Moreover antibodies to this virus were detected in 90 percent of animals in an analysis of paired sera.

J. Meszaros et al. (Hungary) noted that enzootic pneumonia in pigs elicited by *M. suis* pneumoniae does considerable economic harm to farms. A method entailing creation of SPF [not further identified] herds was used to eliminate the disease. Gestating sows were subjected to surgery, and piglets were placed in sterile isolation wards. This made it possible to create two generations of pigs free of mycoplasmas.

In addition gestating sows were given tetramizil and tiamulin 2 weeks prior to farrowing in order to obtain piglets free of mycoplasmas. Sows and piglets received these preparations for 5 days after farrowing as well. Then the piglets were taken away from the sows and placed in an isolated farm.

L. Stipkovits (Hungary) recommends examining animals for the presence of pathological changes in lungs typical of enzootic pneumonia, isolating the disease agent and determining presence of antibodies in blood serum as ways to create herds of pigs free of mycoplasmas. When results are positive, those pigs should be removed from the herd.

To prevent pleuropneumonia in piglets, E. Potetsew et al. (Romania) injected inactivated vaccine prepared from strains of hemophilic bacteria, *Pasteurella* and *Bordetella*. As a result pig morbidity decreased from 80-100 to 1-2 percent, and mortality dropped from 16 to 0.75 percent.

A. Motowski et al. (Bulgaria) feel that pig viral transmissible gastroenteritis spread owing to intensification of stock breeding processes, such that farrowing proceeds year-round. They observed arisal of the disease to be periodic with an interval of 3-7 years, and they found that it is aggravated in January-February and when feed is changed. The disease is transmitted primarily by contact with sick animals and during transportation.

D. Peltineanu et al. (Romania) used the indirect immunofluorescence method to diagnose pig viral transmissible gastroenteritis. They studied a total of 938 samples, 361 of them in parallel with the seroneutralization test. The authors concluded that indirect immunofluorescence offers advantages over the seroneutralization test in terms of the time it takes to obtain results and sensitivity.

L. Molnar (Hungary) communicated methods of diagnosing dysentery in pigs by bacteriological and luminescent methods and with the assistance of a phase-contrast microscope. When these methods are combined, the effectiveness of research rises by 100 percent.

Hungarian farms are making wide use of dimetridazole, carbadox, tilan and lincomycin to treat dysentery in pigs. The author focused attention on strains of the disease agents that are resistant to tilan, arsenic preparations and dimetridazole.

K. Sekleanu et al. (Romania) tested a vaccine prepared from *E. coli* strains of serum groups 08, 09, 0101, 0150, 015 and 078. The vaccine dose contained  $3 \times 10^9$  cells of each serum group. The vaccine was injected subcutaneously into pregnant cows, within 30-40 days of calving the first time and within 14-21 days the second time.

Newborn calves from vaccinated cows contracted colibacteriosis more rarely, at older age this disease occurred in milder form, and mortality was halved.

M. Petkow et al. (Bulgaria) described the results of testing hyperimmune serum against calf colibacteriosis. The serum was prepared by hyperimmunization of 3-4 year cows. *E. coli* strains of serum groups 0101, 09, 08 and 0117 containing adhesive antibodies (K 99, Ent+) were used for this purpose. At first the cows were injected with killed antigen, and then with live antigen. At the end of hyperimmunization the antibody titer was 1:1,600 and higher.

The serum was used in farms at which morbidity was 30-70 percent and mortality was 10-40 percent. Each calf was administered 100 ml serum perorally not later than 2 hours after birth. Control calves were treated by the commonly accepted methods. Among experimental animals, 84.2 percent remained disease-free, while for control animals this figure was 41.7 percent; mortality was 4.5 and 18.8 percent respectively.

Vaccine against colibacteriosis in piglets was prepared from attenuated strains of *E. coli* containing K 88 and 99 antibodies. It was injected into sows 5 and 2 weeks prior to farrowing, intramuscularly behind the ear at a dose of 2 ml. A week following ob'yem [translation unknown], piglets were



vaccinated in the same place (with a 0.5 ml dose). As a result 2-27 percent of the animals in the experimental group contracted colibacteriosis, while 35-94 percent did so in the control group.

M. Kondracki (Poland) devoted his report to development of resistance to *E. coli* with the simultaneous application of several antibiotics and sulfanilamides (penicillin+streptomycin, neomycin+streptomycin, oxytetracycline+streptomycin, neomycin+oxytetracycline, neomycin+chloramphenicol, oxytetracycline+sulfamerazine, chloramphenicol+sulfamerazine).

The drugs were administered to 4-5 week piglets over a 3 day period. Intestinal contents were analyzed for the presence of *E. coli*, lactobacilli and streptococci while the animals were alive and following their death. The author concluded that combined application of the drugs can increase sensitivity of microorganisms to the drugs and retard development of resistant forms of bacteria. Concurrently this method increases multiple resistance.

The Soviet delegation gave the following reports: N. N. Kryukov--"The Hemagglutination Inhibition Test for Diagnosis of IRT [not further identified]"; A. V. Golikov--"Biological Properties of Swine Dysentery Pathogen."

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## VETERINARY MEDICINE

### OUTBREAK OF FOOT-AND-MOUTH DISEASE AVERTED IN BULGARIA

Moscow IZVESTIYA in Russian 6 Nov 84 p 5

[Article by V. Zakhar'ko, IZVESTIYA special correspondent in Sofia: "Operation 'Asia-1'"]

[Text] The final paragraph of this story has not yet been written, but now, in early November, we can safely state that Bulgaria has thrown up a tight cordon against the virus of the "Asia-1" foot-and-mouth disease, brought into Europe from the tropics, a disease dangerous to many species of agricultural animals.

A hot afternoon in Sofia. The regular impassive clacking of the teletype: alarming news from Paris. An emergency meeting in the office of the secretary of the BCP Central Committee. Brief orders to the ministries of internal affairs, foreign trade and foreign affairs. A command is sent out to the border points, the airports and seaports, rail and bus stations, to redouble vigilance in sanitary inspection. Towards evening a car with siren wailing races southeast out of the city, its sides displaying the blue circles and blue crosses of the Veterinary First Aid.... This would be the chronological order of the episodes of a film depicting the story which started at noon on 27 July in Sofia.

The regular and impassive clacking of the teletype was heard at number 15-A Pencho Slaveykov St., home of the Veterinarno Delo [Veterinary Science] scientific production association. Its headquarters and many of the laboratories are located here, but the basic detachment of specialists operates in all 28 okrugs of the country. After reading the telex from Paris, the operator on duty rushed off to make a report....

The European Commission for Combatting foot-and-Mouth Disease [ECCHMD] (an organ of the United Nations Food and Agriculture Organization) was notifying Bulgaria that at some time after 20 June a cattle disease had been reported from Greece, from the delta of the River Maritsa. Samples had been taken and sent to Athens, where investigations revealed that the disease was most probably caused by the virus of the "Asia-1" foot-and-mouth disease. A part of the samples were flown to the Pirbright International Laboratory in England for a confirmation of this diagnosis. The diagnosis was indeed confirmed.

There are as many as 60 strains of foot-and-mouth disease, but the most aggressive of these is this very strain, "Asia-1", which usually flares up first in Southeast Asia and the Middle and Near East. It spreads extremely rapidly, causing enormous destruction of livestock, and is especially fatal to newborn cattle. Where this disease strikes its consequences are felt for many years after. Never before had it invaded Europe. In June 1984 it appeared here for the first time.

By what route did this tropical foot-and-mouth disease reach the delta of the Maritsa, a river which runs through Bulgaria, Greece and Turkey alike? The report from Paris did not comment on this. Not only a few flaps of a bird's wing, the dash of a wild animal, a finite number of revolutions of an automobile wheel and the virus could appear on Bulgarian territory. The complexes and farms here contain enormous herds. An invisible virus from the beak of a pretty bird or from the dainty heel of an elegant stipper could cause an unprecedented amount of damage.

However alarming this news of the tropical foot-and-mouth disease might be, it was certainly no bolt out of the blue which took everyone by surprise. A system for combatting dangerous animal diseases has been set up in Bulgaria and is constantly on the alert. Its foundations were laid 20 years ago, with the first shift towards concentration and specialization of agricultural production. The appearance of large-scale complexes and the concentration of many thousands of head of cattle in one place called for major improvements in Veterinary science and practice, which were in fact achieved. Recent years have witnessed a significant decline in the loss of animals from infectious diseases.

Bulgaria, a lively crossroads of world trade routes, maintains strict veterinary and sanitary control of its borders. Every year it inspects approximately 400,000 transit trucks, 350,000 railway cars, 8,000-9,000 planes, and up to 5,000 seagoing and rivergoing vessels. A special headquarters was formed in each of the 28 okrugs to coordinate the efforts of veterinarians, and the organs of public health, transport, police, and other services in wiping out any disease should this prove necessary.

But this time the situation called for a meeting of the national headquarters, headed by Secretary of the BCP Central Committee Vasil Tsanov. Eleven representatives of the different ministries and departments gathered at his office at 2:30. In 45 minutes measures worked out by the headquarters had become orders, commands, and decrees covering the entire territory of Bulgaria, most importantly the six southern border okrugs.

There was immediate strengthening of sanitary control at all points of entry into the country, by automobile, rail, sea and air. Every day 15,000 trucks and cars pass through from Asia into Europe and back via the single border point of Kapitan Andreevo. Now this continuous stream had to be slowed down. All passengers and drivers were required to leave their vehicles and pass through wooden boxes containing sawdust soaked in disinfectant, and the vehicles were also driven through the boxes.

Within a few hours of the meeting at the national headquarters over 10,000 veterinarians and veterinary technicians were called into action. Increased disinfection of all farms and complexes began. Routes of movement of animals were reduced to a minimum and kept under strict observation. Even more care than usual was paid to the examination of meats, milk, cheeses and other products sold on the marketplace and for public consumption.

By this time shipments of "Asia-1" vaccine were already reaching Sofia from abroad. Bulgaria accords great importance to international collaboration in the struggle against infectious diseases of animals, participating in nearly 30 conventions of veterinary hygiene. Collaboration with the Soviet Union and with other socialist countries is considered to be especially fruitful. Many of the methods of combatting dangerous diseases have been unified under the SEV [CEMA]. Close scientific contacts have been established over the entire spectrum of veterinary problems, and there is exchange of special equipment and drugs. As regards the "Asia-1" vaccine, Bulgaria received it from the ECCHMD, mentioned above.

Upon reaching Sofia from Paris the vaccine was quickly sent out to the different okrugs. The heat was indescribable that day. [Unclear idiom here]. Not until late in the evening, when it had become relatively cool, did the veterinarians and veterinary orderlies get a change to shower.

"In the space of several nights vaccination had been completed in all those regions directly threatened by 'Asia-1.' Over 6 million animals had been inoculated," said Professor Ivan Bozhkov. "Within 20 days we had confirmed the development of immunity in the animals, and shortly after our colleagues in Greece succeeded in extinguishing the focus of the disease. On 30 July the strict quarantine measures in our country were lifted, but even today we have not reduced our vigilance."

At 15-A Pencho Slaveykov St. the teletype is never switched off, weekdays, weekends or holidays.

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MISCELLANEOUS

UDC 616.9-036.25(063):378(476.1)

SECOND ALL-UNION SCIENTIFIC STUDENT CONFERENCE ON TROPICAL MEDICINE

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 11, Nov 84 pp 69-70

/Report on conference by P. G. Pivchenko, Minsk/

/Text/ The Second All-Union Conference of Foreign Students on Tropical Medicine was held at facilities of the Minsk Medical Institute on 17-19 April 1984. A total of 86 foreign students from 39 countries in Asia, Africa, Europe and Latin America took part in the work of this conference. The foreign students that have presented reports study in 21 medical institutions in the USSR.

Executives of the USSR Ministry of Health and of the Belorussian SSR Ministry of Higher and Secondary Specialized Education and leading specialists in the country's medical higher educational institutions in tropical medicine attended the conference.

Prof A. A. Klyucharev, rector of the Minsk Medical Institute, presented the report "Work of the Minsk Medical Institute in Training Specialists for Foreign Countries." He discussed in detail the institute's activity in training medical men for foreign countries. The speaker stressed that the Minsk Medical Institute, like other educational institutions in the USSR, paid much attention to the creation of the best conditions for the studies, public work, daily life and rest of foreign students. However, as A. A. Klyucharev noted, the training of true specialists also requires an active position of the foreign students themselves: a great deal of industry and self-discipline in mastering special knowledge and practical skills, a mandatory participation in scientific and academic research, a serious attitude toward practical work and participation in social activities. All the conditions for this have been created for foreign students at the institute.

Five section meetings were held at the conference: The following reports were heard at them: social hygiene, hygiene, epidemiology and microbiology; theoretical medicine; bacterial and virus diseases in tropical countries and tropical helminthiases; protozoan and fungus diseases in tropical countries; pathology of internal organs.

In all, at section meetings foreign students presented 88 reports on various problems of pathology in tropical countries and measures to prevent it.



A total of 49 participants in the conference spoke during debates at the five sections. Most reports were characterized by a profound analysis and knowledge of the material and a high scientific level. The reports were informative, had elements of novelty and were based on personal observations and data in the literature with the utilization of WHO materials. Of significance is the fact that a number of reports have been made on the basis of materials gathered in the students' homelands during their practical work, which is especially important in the training of physicians for their future work.

The speakers pointed out a number of social and economic problems, on whose solution success in the control of infectious and invasive diseases in developing countries depends to a large extent.

Profs G. I. Gerasimovich, A. S. Zakharevskiy, A. P. Krasil'nikov, A. S. Leontyuk, N. I. Lebedev and P. L. Novikov, scientists at the Minsk Medical Institute, docents A. A. Astapov, V. M. Baran, M. K. Zubritskiy and R. G. Karapetyan, as well as representatives from the country's other cities, such as Yu. A. Il'inskiy (head of the Department of Infectious Diseases of the Second Moscow Medical Institute), docent M. M. Antonov (First Leningrad Institute) and so forth, gave scientific guidance at section meetings.

The reports of scientific guides and analysis of the results of the conference work point to the high activity of the participants in the conference and to the good training of foreign students in problems of tropical medicine of their regions. It was noted that medical higher educational institutions in the Soviet Union paid serious attention to the scientific and academic research of foreign students as one of the important elements for extending special knowledge and accumulating practical skills. An important place in most research topics was assigned to the consideration of the specific nature of the future activity of foreign citizens.

However, a number of reports were of the nature of abstracts (based on the materials of Soviet and foreign scientists and of public health organizations, as well as WHO materials) and some reports on a clinical and, especially, theoretical plane were not at all connected with the specificity of tropical medicine.

In the activity of participation and quality of student research the papers presented by Donetsk, Kalinin, Kiev, Kuban, Minsk, First Leningrad, Pyatigorsk, Kharkov and Tashkent medical institutes received positive comments.

Ye. M. Zheltikova, head of a sector of the USSR Ministry of Health, presented a report to the participants in the conference at the concluding meeting. She shed light on the role of the Soviet state in providing assistance to foreign countries in the training of medical specialists and stressed the basic tasks facing foreign students in order to become highly skilled specialists.

Fourteen people made speeches of welcome to the organizational committee of the conference. They gave a high rating to the organization of the conference and to the conditions created for its participants. It was stressed that in the USSR a great deal of attention was paid to work on providing international assistance to foreign countries in the education of future

medical specialists. Everyone expressed the unanimous opinion on the advisability of holding such conferences, as an important link in the training of highly skilled specialists with due regard for the specific nature of tropical medicine.

On the basis of the conference results recommendations were adopted for medical higher educational institutions for an improvement in the organization of the scientific work of foreign students.

The recommendations stressed a number of aspects of great importance in the training of highly skilled medical specialists for foreign countries. For example, the holding of departmental and intra- and interinstitution student conferences on academic and scientific research in tropical medicine and problems of public health organization in developing countries as an important aspect in this process.

It was noted that foreign students should be enlisted in academic and scientific research from the first courses and offered research topics with due regard for the specific nature of regional pathology under the conditions of their future work. For this, scientific and academic research guidance of foreign students by a teaching staff with work experience in tropical countries is important. Scientific and academic research should be maximally utilized for teaching foreign students practical skills. The recommendations stressed the need for the introduction of elements of scientific work in the process of practical work: holding of conferences and seminars of foreign students on the basis of the materials of clinical bases and polyclinics, where foreign students undergo practice.

It was proposed that medical higher educational institutions focus the attention of foreign students, during the selection of topics and in the process of work on them, on the role of social factors in pathology.

Consideration of the suggestions and proposals received from former graduates--foreign students--working in their homelands is important for an improvement in the organization of academic and scientific research.

As stressed in the recommendations, for a correct organization of academic and scientific research at all medical higher educational institutions where foreign students study it is necessary to establish methodological commissions on tropical medicine, which should deal with problems of organization, coordination and control of this area of work.

Taking into consideration the importance of the conference held for the cause of improving the training of highly skilled physicians for foreign countries, the organizational committee petitioned the USSR Ministry of Health to hold the third scientific conference of foreign students on tropical medicine in 1987.

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MISCELLANEOUS

BRIEFS

VIETNAMESE DELEGATION IN MOLDAVIA--(ATEM)--A delegation of Vietnamese scientists, headed by (Nguyen Van Hieu), president of the SRV National Center for Scientific Studies, was in Moldavia for three days. It is in our country on the invitation of the presidium of the USSR Academy of Sciences. The guests were received by N.P. Kiriyak, assistant chairman of the Moldavian SSR Council of Ministers. They talked in the presidium of the MSSR Academy of Sciences, familiarized themselves with the activity of its subdivisions, discussed the potential for joint studies by Moldavian and Vietnamese scientists, and visited a number of the republic's educational institutions. Commenting on the results of the visit, (Nguyen Van Hieu) noted that the members of the delegation obtained much valuable information on organizing and increasing the effectiveness of scientific work. "We, like our Moldavian colleagues, believe that there are great opportunities for further developing ties," said he. "The favorable results of cooperation among Vietnamese and Moldavian specialists in the field of the chemistry of natural compounds, which will be continued, convinces us of this. Our country is interested in developing similar ties in other sciences as well, particularly in genetics and selection, cybernetics, applied mathematics, physics, and the electron method of metal processing. [Text] [Kishinev SOVETSKAYA MOLDAVIYA in Russian 24 Nov 84 p 3] 12461

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